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GARBAGE AND RUBBISH DISPOSAL IN LOS ANGELES

New Method of Utilizing Garbage by Reduction—Description of Plant and of Its Operation—Run by Heat from Burning Rubbish—Reduction Company Buys Garbage From City.

By SEWARD C. SIMONS.*

The City of Los Angeles in October, 1913, entered into a contract with C. D. Crouch by which he agreed to pay the city 51 cents a ton for all garbage delivered at the plant which he proposed to build. (See *Municipal Journal* for January 15, 1914.) This Los Angeles plant, now starting on its third month of operation, was, it is believed, the first to turn garbage from a liability into an asset, and, as it is built on absolutely novel lines, it is of peculiar interest.

The Pacific Reduction Company, which was organized by Mr. Crouch to carry out the contract, has erected a plant at a cost, including land, of about \$350,000 on a site purchased in the extreme southeast corner of the city limits, reached by the Atchison, Topeka and Santa Fe and the Salt Lake railroads. The site is admirable in everything except the length of haul which it necessitates for the city garbage wagons, this amounting at a maximum to 9 miles. The site covers $5\frac{1}{2}$ acres, on part of which the city is now erecting stables.

Los Angeles has a population of about 500,000, of whom all but about 50,000 are tributary to the plant. In 1914, when the garbage was fed to hogs by a private contractor, the daily amount of garbage averaged 125 tons. It is expected that when the new plant is running at full capacity (by arrangement with the city the company is at present taking only one-third of that amount, to be increased each month) about 175 tons will be delivered by the city. The plant also disposes of the combustible rubbish, for which there is no municipal collection, private collectors charging individuals varying prices for this service; for disposing of which rubbish

the company charges 60 cents a ton. Dead animals are all disposed of at the plant, the city paying \$3 for each full sized animal and 80 cents for calves, etc. The contract with the company runs ten years, but there is a provision that the city may take over the plant at a price to be fixed by arbitrators, one of which is to be appointed by the city, one by the company, and the third to be chosen by these two. A special provision of the contract states that the price so fixed shall include the present worth of the earnings for the remaining period, capitalized at 6 per cent.

The buildings are reinforced concrete and brick construction, with steel window-glass frames. They were all built by the Reduction Company by day labor, except the stack 156 feet high, which was constructed by the Weber Chimney Company of Chicago. This stack is the tallest concrete stack in Southern California, and is a beautiful piece of work. The general layout is shown on the accompanying plan. The photograph, figure 1, is taken from the northeast and shows, from left to right, the green garbage building, the stack, the reducer building, condenser building, grease storage tanks and office-warehouse. No. 2, taken from the southwest, shows, left to right, warehouse, condenser building, reducer building, boiler house, and stack; the work on the new city stables is located in the foreground, while to the extreme left is the city dump for non-combustible rubbish.

The wastes of the city are divided by ordinance into three principal classes—garbage, combustible refuse, and non-combustible refuse. There are no ashes to collect, as the fuel used in the city is almost wholly oil. The city collects the garbage from the central districts daily,

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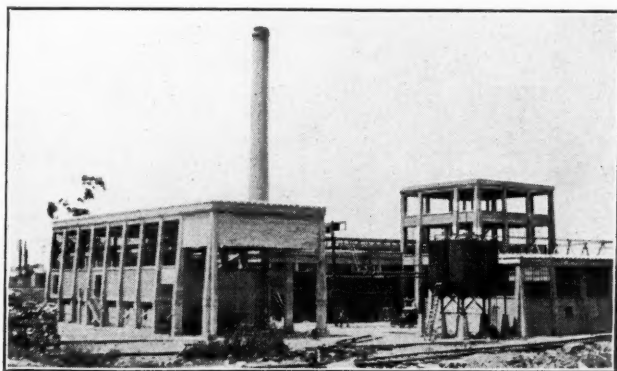


FIG. 1—GENERAL VIEW FROM NORTHEAST.

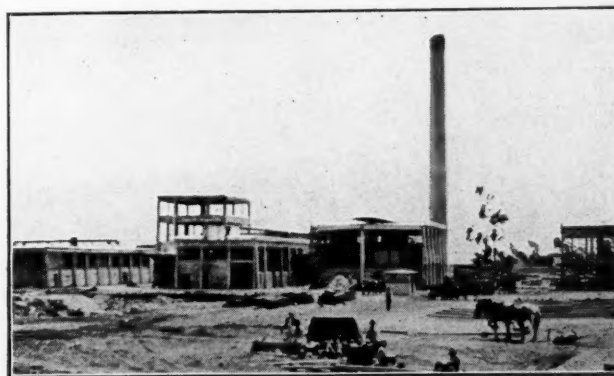


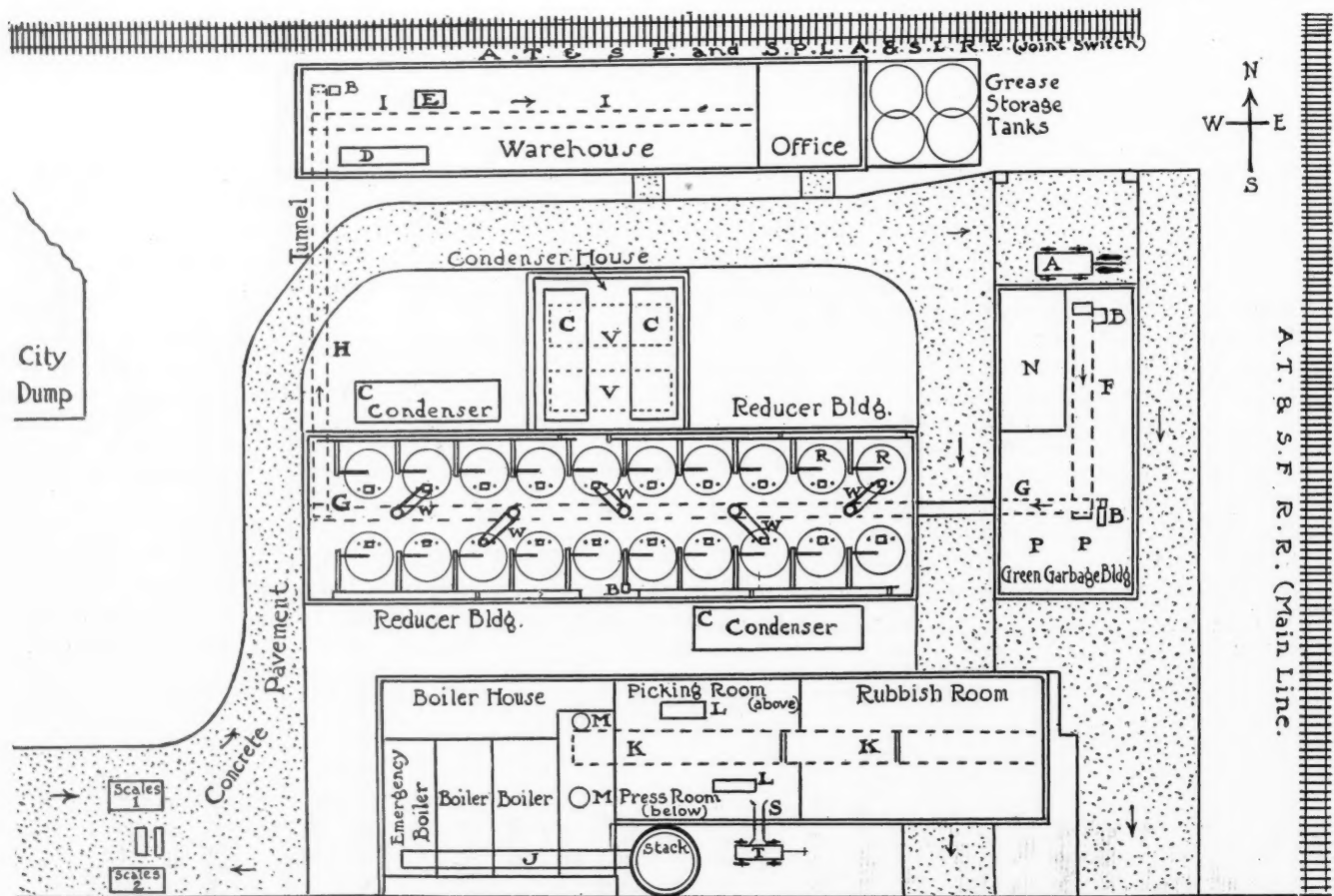
FIG. 2—GENERAL VIEW FROM SOUTHWEST.

while in the less thickly built portions the collection is made twice or three times a week. The wagon used is shown in photographs 4 and 5. It consists of a wooden running gear on which rests a removable steel body 13 feet 6 inches long, 3 feet 5 inches wide and 2 feet 6 inches high, holding from 3,800 to 4,500 pounds of garbage net. After weighing at the scales of the plant (position shown on plan) the wagon is driven to the green garbage building. This building is 120 by 40 feet and is fitted with a traveling crane or telfer system by which the wagon body is lifted off its gear, raised, carried to the bin and dumped by lowering the beveled end, and promptly returned to the running gear. The whole operation takes about $4\frac{1}{2}$ minutes. Fig. 4 shows the body being lifted from the gear, while a second wagon is waiting; and Fig. 5 shows the body dumping. In the foreground of the latter can be seen portions of dead animals which are being cut up for rendering. At present a temporary bin for green garbage is being used at the west end of the building. Provision has been made, however, as will be seen by the plan, for a green garbage bin from which the garbage will be fed onto a wide conveyor for sorting. It is also planned to install a system of washing the wagon bodies after they have been dumped.

From the garbage dump the material is raked onto a scraper conveyor which carries it across to the reducer building. This building, 176 feet by 48 feet, contains 20 reducers, which form the central part of the system. The scraper conveyor passes along the center of this building near the roof, and feeds the garbage into the reducers by means of movable chutes.

The system of reduction, which is known as the Cobwell, was devised by the C. O. Bartlett & Snow Co., which was general contractor for the plant. The reducer is a steam jacketed cylindrical apparatus 8 feet in diameter by 4 feet high. The inside is fitted with an agitating device rotated by means of gears placed on the upper portion of the apparatus (shown in Fig. 6). Each reducer holds about $3\frac{1}{2}$ tons of garbage per charge. As soon as the reducer is filled, a solvent known as cobolene (a petroleum product not greatly different from naphtha) is run in in sufficient quantities to entirely cover the mass, live steam at a pressure of 85 pounds per square inch is admitted to the jacketed walls and bottoms, and the stirring device is started. Connected with the reducer is a large vapor line running to a condenser, and the principle of the operation depends upon the fact that water is vaporized at a lower temperature when evaporated along with a solvent having a low boiling point. As the water and solvent are evaporated together, the solvent is separated by gravity and returns to the reducer, while the water, which is perfectly clear, flows to the sewer; the operation being continued until a test shows that all the water has been removed and the solvent is coming over clear.

The material is now dry except for the solvent and the grease, the latter being by this time entirely free and dissolved in the solvent. The solvent and grease are then drained from the reducer to a still, from which the solvent can readily be driven off and the grease recovered. When the last traces of solvent have been removed by further heat the garbage is discharged through a door in



A—Garbage wagon in position to unload. BB—Driving motors. CC—Condensers. D—Rotary screen. E—Rotary grinder. F—Green garbage conveyor, steel belt. G—Green garbage conveyor, scraper. H—Tankage conveyor, scraper in tunnel. I—Finished tankage conveyor, screw. J—Waste gases flue to stack. K—Paper and rubbish conveyor and sorting belt. LL—Paper baling presses. MM—Firing hole over Dutch oven incinerator. N—Green garbage room. PP—Present green garbage dump. RR—Reducers (20 in all). S—Chute for non-combustible rubbish. T—Waiting wagon for non-combustible rubbish. VV—Stills (below) to evaporate solvent from Grease. WW—Movable chutes for feeding garbage from conveyor to reducers. Each one reaches 4 reducers.

GENERAL LAYOUT OF PLANT OF PACIFIC REDUCTION COMPANY AT LOS ANGELES.

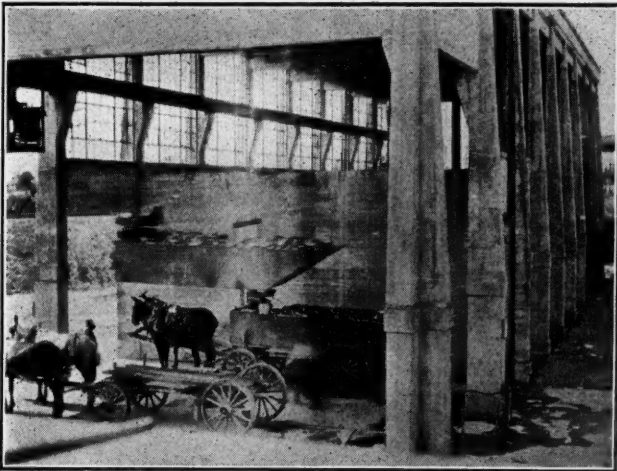


FIG. 4—RAISING WAGON BODY.
Second Wagon Waiting to be Unloaded.

the side of the apparatus by means of the agitating device. The whole operation in the reducer requires from 10 to 16 hours.

The matter discharged from the reducer, known as tankage, falls from the door of the reducer onto a scraper conveyor located on the floor of the reducer building, which carries it to the north end of the building, where it is delivered to a second conveyor, which, by means of a tunnel, carries it to the warehouse. (See plan.) At the warehouse the tankage is passed through a rotary screen, any material which is not fine enough being ground in a special rotary grinder, and the finished product being delivered ready for sacking by a screw conveyor, shown in Fig. 7.

The process yields a very high quality of tankage, and also a surprisingly large volume from the garbage

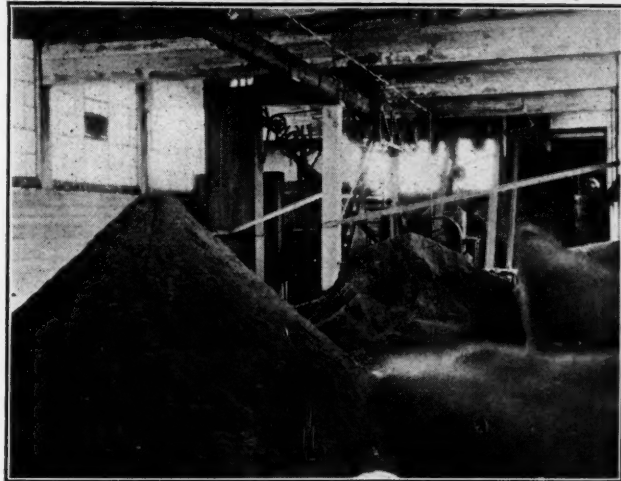


FIG. 7—TANKAGE BUILDING.

handled, one ton of green garbage producing about 600 pounds of tankage, as well as 85 pounds of grease. This result is due to the fact that practically none of the volatile products is lost, because of the low temperature of the operation, and shows that the estimates frequently given that garbage is normally 80 per cent water do not hold, at least for Los Angeles. It may be remarked here that this conclusion is borne out by recent results obtained in Chicago, where, in the direct drying process a product is obtained which is 27 per cent by weight of the original garbage. An analysis of the tankage produced by the Pacific Reduction Company shows:

2.68 per cent nitrogen,
2.00 per cent phosphoric acid,
1.91 per cent potash.

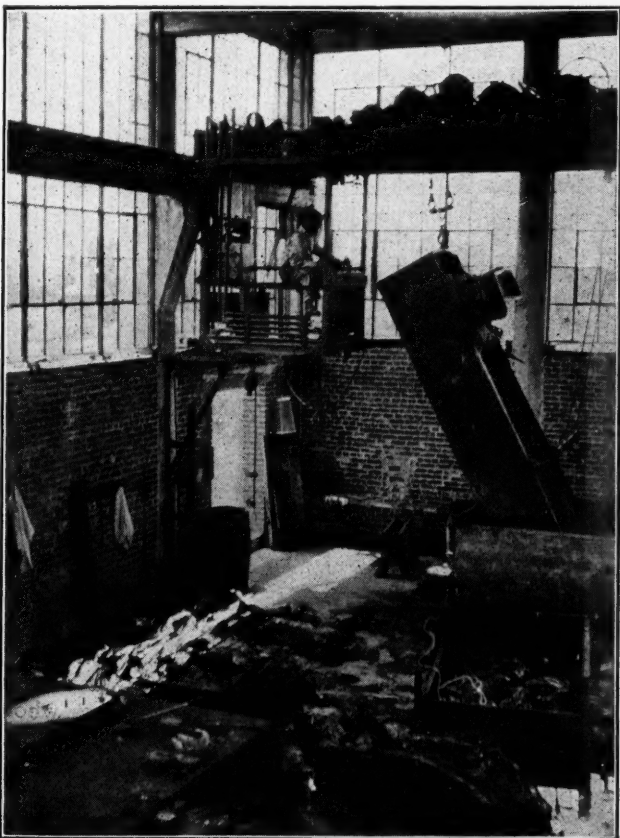


FIG. 5—DUMPING WAGON BODY INTO GREEN GARBAGE BIN.

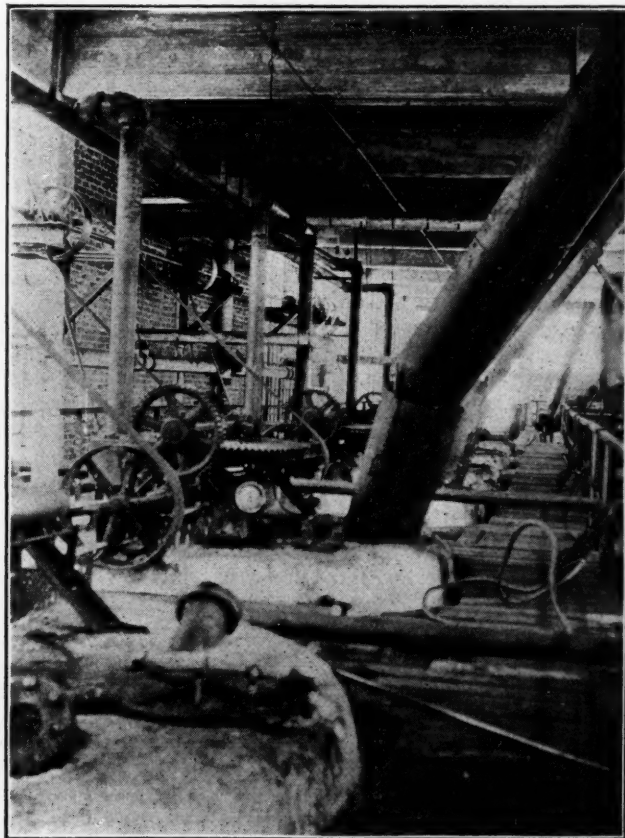


FIG. 6—REDUCER BUILDING, SHOWING TOPS OF ONE ROW OF TEN REDUCERS.



FIG. 8—HANDLING RUBBISH.

At the present market rates for fertilizer this is worth about \$10 per ton.

It is expected by the Pacific Reduction Company, however, that a better price than this will be obtained for the product for feeding to stock, and some successful experiments have been made with this in view. It is found to have quite a different consistency from the tankage produced by the Chamberlain and Arnold processes, and when thoroughly soaked in water is said to have food value exceeding that of wheat bran. Although 3,000 hogs are now being fed upon this material, other hog owners (chiefly Japanese who have been accustomed to feed garbage directly) state that the hogs will not eat the material; but it is thought that this, if a fact, is because the tankage is not soaked thoroughly before feeding it to the animals.

The grease produced is of a very satisfactory quality, and at the present market rate of $3\frac{7}{8}$ cents per pound yields \$3.10 per ton of green garbage.

Efforts are being made by the company to shorten the time required for the operation in the reducers. It is evident that this must be done if the full amount of the city garbage is to be handled; for the 20 reducers, assuming that they could each handle two charges a day (which is more than their present operation), with $3\frac{1}{2}$ tons per charge, would have a maximum capacity of only 140 tons as against a requirement of 175 tons. While there would seem to be an element of inefficiency from a mechanical standpoint in making necessary the evaporation of one pound of solvent for each pound of water removed, this is defended by the advocates of the system on the ground that in this way the grease is thoroughly loosened up and a larger yield obtained. To the writer this is problematical, there being some doubt as to whether the benefits balance the cost. There is a rather surprisingly small loss of solvent, this being reported to be only 3 gallons per ton of garbage (the solvent costing 11 cents a gallon). It should also be

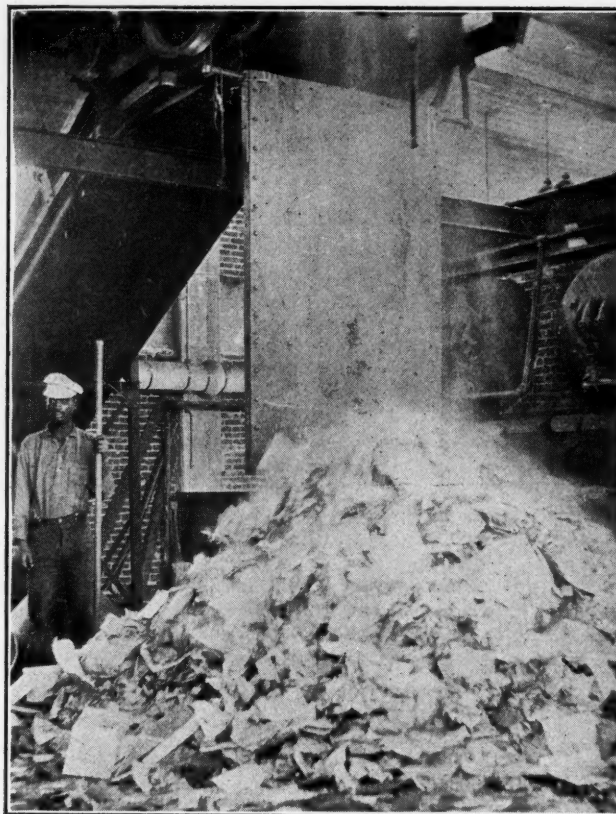


FIG. 9—CONVEYOR DEPOSITING RUBBISH FOR FEEDING FURNACE.

said that as the plant is built in units, more reducers can be added if the present equipment is insufficient.

The city, by the terms of its contract, furnishes the water for the operation of the plant, and as this amounts to 100 gallons per minute, it has been decided to erect a cooling system to enable the repeated use of the water. Even with this plant, the cost of water to the city will be about \$7,000 a year.

The president of the Board of Public Works, Lorin A. Handley, though announcing himself frankly in favor of feeding garbage to hogs, states that the plant is operating to the entire satisfaction of the city. There is practically no odor, and no nuisance of any form. Mr. Handley is in some doubt as to whether the company can operate at a financial profit, and also as to whether the plant has capacity to handle the full amount of garbage of the city, "but that is the concern of the company." By the terms of the agreement with the city, the company will increase the amount handled until by the first of September the full amount will be delivered.

In connection with the garbage plant is a complete equipment for the sorting and disposal of combustible rubbish. The private collectors of rubbish empty their wagons over a conveyor-belt (shown in Fig. 8), on which the rubbish passes between two rows of sorters who take out the valuable papers, etc., allowing the useless material to pass along the conveyor to the position (shown in Fig. 9) from which it is fed into the furnace and provides a portion of the necessary fuel. There is now pending in the Los Angeles courts a suit to compel the rubbish collectors to deliver the whole amount of their collections at the Pacific Reduction Company plant, instead of selling a portion of their load, as at present, to the Economy Paper Company.

The steam equipment of the plant consists of three 300 H.P. Babcock and Wilcox boilers, installed by C. C. Moore & Co., of San Francisco. The rubbish, which is burned in a Dutch oven, provides almost enough heat

during 9 hours of the day, the deficiency being made up by use of fuel oil. The reducers, however, are driven by electric motors, power for which is purchased at low rates. Each reducer takes about 4 H.P. for operating the stirring device.

Adjacent to the garbage plant is a large excavation at present being used as a city dump for non-combustible rubbish. By a separate contract, the city receives \$100 a month from a scavenger for the privilege of picking this over for valuable matter. It is clearly advantageous to the city to have this work done by one responsible person.

On the whole, this disposal of the garbage and rubbish is very satisfactory from every public consideration: cost, sanitary features, and lack of nuisance. Whether it will prove financially profitable can be determined only after several months of operation. Certainly it is much preferable to feeding the garbage to hogs from the point of view of public health and nuisance; and if the company is able to carry out its contract it furnishes a much more economical solution than an incinerator, in which all the valuable products would be lost and additional expenditure be necessary for operation.

Note by Editor: According to recent information, Assistant City Engineer A. C. Hansen has informed the Los Angeles Board of Public Works that if water be furnished to the reduction plant at the present rate per ton when the plant is operating at full capacity, it will cost the city \$49,000 a year. This is equivalent to 77 cents per ton of garbage. If a well which he proposes should be constructed, he estimates the cost at about \$7,000 and the maintenance at \$7,300, or about \$8,000 including interest and depreciation; which is equivalent to 12½ cents per ton. The present cost of water is 26 cents a ton more than the city receives for its garbage, and if we consider that the bulk of the garbage must be hauled an average of five miles to the plant, that the city pays \$3 for the destruction of each horse or cow (many cities derive an income from these), and the company also receives payment for burning refuse which furnishes much of the steam for operating its plant, the bargain does not appear to be so wonderfully in favor of the city as at first appeared. But even if these offsets be considered, the cost to Los Angeles for disposing of its garbage is much less than the majority of cities find this costing them.

HOLYOKE CENTRAL FIRE STATION

Specially Designed for Motor Apparatus—Removing Exhaust Gases—Sleeping Quarters for Forty-five Men—Fire Alarm Apparatus Room

There has just been completed at Holyoke, Mass., a central fire station which is unusually large and complete. As shown by the accompanying architect's drawing, the building consists of four stories, together with a basement. It is faced with red rough-cut brick trimmed with gray sandstone. In the front are five apparatus doors, each giving a clear opening of 10½ feet, separated by masonry piers 4 feet 6 inches wide. These doors are furnished with ornamental glass panels. Another ornamental feature consists of six wrought iron lanterns mounted on these piers and furnished with red glass. The building is surmounted by a flagpole 25 feet high, octagonal in cross section, of Southern yellow pine 8 inches thick at the bottom and 5 inches at the top; on top of which is a copper eagle covered with gold leaf.

The building is 82 feet wide in front and 90 feet deep, both outside dimensions, and is rectangular in plan. In one corner of the front of the basement is an electric apparatus room, in one corner of which is a 6-foot by 3-foot 6-inch transformer room with 8-inch brick walls. Around the walls of the basement are located a storage room with shelves and drawers; a drying room with

shelves, hooks and boot racks; a room containing the elevator machines, vacuum cleaner and air compressor; a boiler room containing, in addition to the boiler, a hot water tank with Beauvais water heater, used for the purpose of furnishing hot water for the bath rooms and the fire engines; and next to this a coal bin with a capacity of 75 tons. In the basement is also a machine shop provided with a 5 h.p. motor. In the floor above—the main floor—there is a pit opening 7 feet by 3 feet covered with 3-inch plank, which opening comes over one end of the machine shop for convenience in repairing engines, etc. There is a coal chute leading into the coal bin from outside; an ash hoist in an extension of the boiler room for a distance of 4 feet under the sidewalk; a water cooling tank and water filters for providing drinking water; vacuum cleaner riser pipes at several points leading to the upper floors of the building, and 16 steel columns of H section enclosed in concrete for supporting the upper floors.

The first floor is devoted almost exclusively to apparatus, the entire floor being one clear space except for twelve columns for supporting the floor above, and the elevator shaft, stairs, closet, toilet room, reception room and desk which are lined up along one side wall. In a row across the front are stationed the chemical and the cars of the chief, superintendent of fire alarms, assistant chief and the despatch car, while the tractor for the ladder truck occupies the middle of this space, the truck itself extending back toward the rear of the room. Just back of this front row of machines are two brass poles and rubber landing mats leading from the dormitories above, there being two other poles in the rear of the room. In a line back of the apparatus just named are located two engines with tractors and a water tower. In the rear wall of the building in one corner of the room is a door with a 9½-foot clear opening, while most of the rear is occupied by a hose dryer having a length of little over 50 feet.

Under the front row of machines are three floor drains, and in the rear and just in front of the hose dryer are two more floor drains, the floor sloping toward these. This floor is of concrete with a granolithic top finish. The side walls are covered with enameled tile with a patent grip back furnished by the American Enameled Tile Company and set up by the Galassi Mosaic Tile Company. The elevator, which extends from the basement to the fourth floor, is a combination freight and passenger elevator, 7x7 feet, furnished and installed by



CENTRAL FIRE STATION, HOLYOKE, MASS.

the Otis Elevator Company. Near the center of the first floor is a gasoline pump, located behind one of the columns so as to be out of the way and also to be protected from the apparatus when moving in and out of the building.

The second floor contains, in a row across the front, 5 rooms each about 16 feet by 17 feet, one for the fire commissioners; one to serve as the chief's office, adjoining which is the chief's bedroom, and between these two a vault 5 feet 8 inches by 7 feet inside dimensions; next to this the assistant chief's bedroom and office, separated by a partition; all of these communicating with each other and with a corridor in their rear. The fifth front room is a reading room communicating with the corridor. At one end of the corridor and connected with the suite of rooms is a bathroom containing tub and shower and toilet.

The corridor mentioned runs parallel with the front of the building and two of the sliding poles pass through it. Immediately in its rear is a storeroom for towels, cleaning apparatus, etc.; also a large bathroom, containing three showers, a tub, four wash-basins and three toilets, with a floor drain in the center of the room. Rubber curtains are hung in front of each of the shower compartments, which are 6x4 feet and each of which has a drain in the center of the floor. The remainder of this floor, except such as is occupied by corridors, stairways and elevator shaft, is occupied by bedrooms, of which there are thirteen single and one double.

The third floor contains seventeen single and one double bedroom, a large bathroom which is a duplicate of one on the second floor, and a recreation room 31 feet by 34 feet 2 inches, which contains eight windows. This floor also contains a store room for towels and cleaning apparatus, a linen closet, etc. On each floor are several outlets for vacuum cleaning; also a gong for rousing the men. Each bedroom is provided with a closet and contains about 170 square feet of floor surface, including the closet.

On the fourth floor is a room 31 feet by 34 feet 6 inches, containing, behind a brass rail, the fire-alarm signal apparatus, wires for which are brought up from the basement through a vertical shaft 2 feet by 3 feet inside dimensions, enclosed in an 8-inch brick wall, and with a ladder up one side. At the front of this room is a 16-inch auto repeater; immediately behind this a telephone desk, on the right of which is a manual and on the left a F. E. S. transformer; while in a row behind these are the incoming and outgoing registers, and in the rear of the room is the joker apparatus. Behind this is a battery room 23 feet 8 inches by 22 feet 9 inches, and in the rear of this a work room and a store room. In the front of the building and communicating with the fire-alarm signal apparatus room is the office of the superintendent of fire alarms, communicating with which is his bedroom and beyond this his lounging room. The remainder of the fourth floor is occupied by nine bedrooms, a large bathroom containing two showers, tub and three toilets, a linen closet, store-room, etc.

A feature which was carried out in this building successfully is a system for taking care of the exhaust from the motor-driven apparatus, which is almost indispensable for a building of this type. The system consists of two lines of 5-inch wrought iron pipe mains hung from the basement ceiling, connected to an exhaust fan set up on the wall of the coal-pocket and connected with the chimney. From these two 5-inch lines are 4-inch branches leading to each machine. The exhaust fan draws the gases from the machines while they are in operation and discharges them into the chimney, the exhaust pipe of the fire apparatus being connected to this

pipng system in such a way that it is automatically let loose when the apparatus leaves its position. The exhaust fan is started automatically whenever an alarm is rung in, and can also be started by hand either at the fan or at the repair pit. The special connection for the exhaust was furnished by the American Metal Hose Company of Waterbury, Conn. A 3x4 inch ell is fastened to the 4-inch exhaust branch so that the 3-inch connected nipple is about 4 inches above the surface of the apparatus floor. Connected to this nipple is a section of 3-inch steel hose about 2½ feet in length, terminating at the further end in a ring; which end is enclosed in a brass tube which slides inside of a piece of 4-inch brass tubing through a bushing at the end, thus making a practically air-tight joint but allowing a play of 3 or 4 inches in length of the pipe. At the end of this 4-inch brass tube is a spring clip arranged to give a tight connection of this with the end of the exhaust pipe on the apparatus, and to hold this joint firmly but to permit it to be drawn apart when the apparatus moves forward.

The architect of this building was Oscar Bauchemin of Holyoke, to whom we are indebted for this information and for the drawing of the building.

EAST LIVERPOOL FIRE DEPARTMENT.

East Liverpool, Ohio, has a population of about 22,000 and a fire department which is completely motorized. Bonds to a total amount of \$33,000 have been issued for the purpose of motorization, these bearing 5 per cent interest and being payable in installments of \$3,000 yearly. During the year 1914 there were purchased from this fund a chief's car from James Boyd & Brother for \$1,775, a Robinson Brothers chemical combination for \$4,335 and an American-La France aerial truck for \$9,322. In addition there are two other chemicals, a triple combination and a lineman's car. The triple combination went into service on November 26, 1913, one of the chemicals on December 6, 1913, another on January 13, 1914, and the third on December 12, 1914; while the aerial truck went into service on February 14, 1914. The cost of all of these cars since going into service and up to January 1, 1915, was \$744.79, during which they covered a combined mileage of 6,126.6 miles. The cost of the apparatus for the year 1914 only was \$639.34 and the total combined mileage was 5,493 miles. During this year the triple combination was out of service between 19 and 20 days, two of the chemicals between one and two days each, the third chemical two hours, the chief's auto three days and half and the lineman's car seven days and a half, while the aerial truck was not out of service at all. The chief of the department, Arthur S. Aungst, calculates that if horse apparatus had been used instead of motor apparatus since the latter has been placed in service, the total cost would have been \$3,277 or \$2,423 more than the actual cost of the auto apparatus. In addition, there has been a saving of \$6,522 in the practical addition of six men to the department. The amount given as the cost of the motor apparatus during 1914 includes \$25.95 for repairs, \$335.53 for gasoline and oil, \$6.50 for alcohol, \$35.50 for painting and varnishing the car, \$5.25 for tubes and the remainder for expressage and general supplies. It does not include anything for depreciation, interest on cost or any overhead charges.

During the year the department responded to 159 alarms, of which 120 were received by telephone, 19 from fire alarm boxes, 16 from combination boxes and 4 verbally. The loss by fire was \$9,217 on a property valuation of \$1,042,496. The per capita cost of maintenance of the department was 98.2 cents, including extraordinary equipment, and fire loss was 41.9 cents per capita, making a total cost for the year of \$1,401 per capita. Of 105

fires extinguished, 13 were by pails of water, 18 by chemicals, 17 by water from hose, 5 by combination of hose and chemicals, 5 by Pyrene, 2 by sprinklers, 1 by salt and the others by miscellaneous methods.

During the year Chief Aungst and the members of the department inspected 1,600 buildings, issued 677 orders for prevention of fires and investigated 341 complaints of liability of fire. The inspections by the department have two purposes, one to prevent fires and the other to make the firemen familiar with the buildings.

Among the minor purchases made during the year was a pulmotor, which is kept at the central station; also a hose tester for testing hose and replacing couplings. The chief renews his recommendation of the previous year that cisterns of large capacity be placed at three points in the business part of the city, to be supplied with an 8-inch main so that in case of breaks in the mains the cisterns would be available for the pumping engines. He also recommends the construction of wells at the wharves at the foot of the business streets, which wells would be connected with the river by pipes and used as suction wells for the fire engines.

SNOW REMOVAL IN NEW YORK

Experience During Last Winter and Spring With the Operation of Commissioner Fetherston's Method, Using Sewers—Comparison With Contract Work

In the issue of December 10, 1914, we described in some detail the method which had been worked out by J. T. Fetherston, commissioner of street cleaning of New York City, under which he planned and was authorized to remove any snowfalls of the winter of 1914-1915 which might be sufficiently deep to warrant the enormous cost involved. On May 17 Mr. Fetherston submitted to the Mayor and the Board of Estimate and Apportionment a report on the work done and results accomplished in carrying out this plan.

As previously described, the plan was to use a force of emergency laborers which were to be called out as soon after any storm began as the superintendent was able to decide that the depth of snow would warrant, and remove the snow by scraping it into sewer manholes as far as possible, piling it for removal by carts on those streets where sewers of sufficient capacity and volume of flow were not available for the satisfactory removal of snow. Previous to the beginning of winter weather, in response to notices and information scattered in various ways, about 40,000 emergency laborers registered for snow fighting. A notification card was made out for each laborer and these cards were classified as to the police precincts in which the laborers resided, and notification cards were also prepared for all regular employees of the street cleaning department and for certain other city employes whom it was planned to call upon for snow work. All these cards were sent to the police stations in the precincts in which the men lived and were there classified by patrolmen's posts for distribution whenever the police department should be notified that snow work was to begin. Upon notice from the commissioner of street cleaning, the police department would then, through the patrolmen, notify all laborers and employes whose names appeared on these cards to report for work at points previously designated, where they were assigned their duties by foremen who had already been given the necessary instruction. The plan of calling the men to work is said by Mr. Fetherston to have been generally successful and the police are credited with rapid and effective work in calling out snow fighters.

As the sending out of a call meant an expenditure of approximately \$50,000 in wages for one shift only, careful judgment was necessary in deciding when to send out such call. During last winter there were nineteen storms in which there was more or less snow, but practically all were of an uncertain character so that it was not possible to start snow fighting when the storm first began, as had been the intention. This resulted in some delay in beginning the work, but also in the sending out of only three calls and in making no mistakes in starting unnecessary work.

It was not until February 2 that the force was called out for snow fighting. This storm began as rain on February 1 and about 9 p. m. turned to sleet which froze on the pavement, and continued until the evening of February 2, during which time about two inches of sleet and half an inch of snow accumulated on the ground. It was not until noon of February 2 that the snow fighting force was called out, and one shift worked until 1 a. m. the next morning. The second storm for which the force was called out began on the morning of March 6 and continued until nearly noon of the 7th, during which time 7.7 inches of snow fell. The call to work was sent out at 8 p. m. on the 6th and two shifts of emergency laborers were employed.

The third storm occurred on April 3 and was entirely unexpected and made a record as the greatest April snowfall in the history of the New York Weather Bureau, being 10.2 inches. The call for automobile snow plows was sent out at 1 p. m. on April 3 and the call for emergency laborers at 3 p. m. Work was carried on continuously with three shifts of emergency laborers until 10 p. m. of April 4, which was Easter Sunday.

"The time allowed for calling out, assigning and actually starting snow fighting work throughout the boroughs of Manhattan, the Bronx and Brooklyn was four hours, and the results indicated that it was feasible to turn out all the men who reported within the time limit set. For the storm of February 1, 12,518 emergency laborers were provided with badges, tickets and equipment and were at work on the assigned areas within four hours. The storms of March 6 and April 3 occurred on Saturday and it was not possible to get a full quota of emergency laborers to report for work, but in each instance about 9,000 men were actually at work on the various streets of the city within four hours after the call was sent to the police department."

About 86 per cent of the snow fighting work was finished within fifteen hours after the storm ceased, but the disposal of snow piles by sewerage on side streets was continued by emergency laborers for several days afterward; the total number of days worked for the three storms being sixteen.



CENTER PILING BY SNOW PLOWS; APRIL 4TH.

Of the 32,607,081 square yards of street area scheduled for snow work in the three boroughs, 26,199,317 were allotted to the snow fighting force, 3,304,009 square yards were arranged to be cleaned by contract and 3,103,755 were required to be cleaned by the street railway. Comparing the snow removal by contract with that by the city's snow fighting force, Mr. Fetherston states that the contractors removed 459,569 cubic yards at the rate of 54.9 cents per cubic yard, the average amount removed per day being 28,723 cubic yards. The city's snow fighting force removed 3,858,912 cubic yards at a total cost of \$271,356, or an average of 7 cents per cubic yard, and removed an average of 241,182 cubic yards per day. (In comparing the volume of snow disposed of in sewers with that removed by trucks, a shrinkage of 50 per cent to 65 per cent on the original depth of snow was allowed for snow fighting.)

The statement shows that the snow fighting force removed about eight times as much snow as was removed by the trucks and at practically the same cost. On truck capacity basis of removal, the rate of removal per day last winter was twice as high as the best previous record, that for 1914, and the cost per cubic yard was 67 per cent less than the lowest previous unit cost, that for 1908. On the area basis of removal (area of street surface multiplied by depth of snow) considering only the snow fighting force, the rate of removal per day last winter was twice as great and the cost per cubic yard was 75 per cent less as compared with the record of the best previous season, that of 1906-1907. The increased speed and reduced cost should, Mr. Fetherston states, be credited to the new method of snow fighting, using sewers for disposal. The total cost of the snow work for the winter was less than \$524,000. It is estimated that if all of the snow had been handled by the contractors' trucking forces alone, removal of the same amount of snow at the lowest previous contract rate (36.7 cents per cubic yard in 1907-1908) would have cost \$1,584,882; while at the trucking rate for last winter the cost would have been \$2,370,846. It should be stated that weather conditions after the snow storms last winter were unusually favorable for snow removal, because high temperature melted some of the snow, did not present the difficult condition of frozen snow and ice which was encountered the previous winter and permitted the men to work with comparative comfort; in spite of which, it is believed that a conservative estimate indicates that the new system saved the city at least half a million dollars on last winter's work.

In our article describing this system previously referred to, a general description was given of the survey then being made of the sewers to show their possibility for use in snow removal. The preliminary data collected

concerning the sewers indicated that it would be possible to place snow in sewers on 37 per cent of the total street area scheduled for snow fighting. As a matter of fact, in the storm of April 3, 61¾ per cent of the total snow fighting area was cleaned by aid of the sewers. This was due to the fact that water from hydrants was used to supplement the ordinary flow in the sewers and proved that even small pipe sewers may be used to advantage, providing there is sufficient depth of either normal sewage or added water to float the snow to the river or harbor. In the March storm 55¼ per cent of the total area was used in this way, while in the first storm only 17½ per cent was so used. In the third storm, 75¾ per cent of the total area was cleared by use of sewers in the borough of Brooklyn. Only minor damage was caused to any of the manholes or sewers through washing out masonry joints and small breakages.

As previously stated, about 40,000 laborers registered for snow work, yet in spite of the unemployment situation in New York City, it was not possible to secure the required number of emergency laborers to fill assignments. The ability to obtain labor promptly and in sufficient numbers is one of the basic elements of the snow fighting program and one which is not subject to control by the administration except through offers of high wages or some other inducement to persuade men to work while a storm is in progress. On the west side of the city north of 59th street it was not possible at any time during the winter to obtain a sufficient force for carrying out the snow fighting plan.

The pan scraper which was supplied to emergency laborers and sweepers for pushing snow into sewer manholes was fairly successful when properly used, but a great number of the scrapers were broken during the work by attempting to use them as shovels. Automobile plows were used for opening up roadways on unscheduled streets and likewise on contract streets as well as on snow fighting streets. The plows proved generally successful but during the first storm practically all of the twenty-six were damaged or broken on account of the density of the snow and the coating of ice on the pavement. A number of changes were made in the design of the plows and during the April storm they stood well under heavy working conditions and it is proposed to extend their use next winter in the latest improved form, especially in those districts where labor is scarce.

In the previous article the system of awarding bonuses for completing set tasks in less than schedule time was described. Last winter only thirteen squad leaders received the bonus of 50 per cent in addition to their regular wages for accomplishing the task assigned. This apparently indicates that either the task was too great or the men unwilling to accomplish the work. An inspection of the forces during all three storms showed that all employees were hard at work and apparently anxious to secure the bonus rate so that the density of snow and the late start in beginning work were probably responsible for preventing many of the squad leaders from earning the bonus. Only 117 emergency laborers received the bonus rate during the entire winter but the minimum rate of 30 cents per hour was sufficient to secure a reasonable supply of labor. Men taken from other departments received 50 per cent in excess of their regular wages for serving in the snow fighting work. Of these 271 were employed as loading and dump foremen at an average rate of 87 cents per hour varying from \$1.30 to 56 cents; 173 were employed on sewer trouble gangs at an average of 75 cents an hour; 49 as sewer department supervisors at 63 cents an hour, 37 as supervising inspectors for the finance department at an average of 70 cents an hour, 39 as gang checkers for the



DUMPING SNOW INTO SEWER MANHOLE.

finance department at an average of 73 cents, 35 as temporary gang checkers at an average of 50 cents, 837 officers, clerks and mechanics of the department of street cleaning at an average of 56 cents, 21 employees of the Bureau of Weights and Measures at an average of 70 cents and 116 temporary employees of the same bureau at a flat rate of 62½ cents.

Mr. Fetherston reports that the system of checking and verification proved generally satisfactory and no irregularities in the snow fighting force were discovered during the season. Arrangements had been made with the department of finance to begin paying the men at 12 o'clock noon on the day after the storm finished. There was some confusion and delay in paying emergency laborers after the storm of February 2, but defects in the pay system were rectified so that after the other two storms the laborers were paid promptly on the day succeeding the storm. The size of this task may be appreciated from the statement that about 20,000 men were paid in five hours beginning at noon on April 5, fifteen hours after the last shift had finished its work.

As planned last fall, a first reserve of department drivers with horses and carts, and a second reserve of private trucks were provided, but neither of these were called upon last winter. There was realized a great advantage in borrowing employes from the police and tenement house departments, the borough presidents' offices and other city departments to supervise contract snow removal as loading and dumping foremen, thus leaving all the street cleaning employes free to perform their regular duties, a plan which had been contemplated for years past but never carried out.

A distribution of the item of cost of snow work during the winter of 1914-1915 is shown in the accompanying table. The expenses and costs include complete charges up to May 1, 1915.

SUMMARY OF EXPENSES. SNOW WORK, WINTER 1914-15.

Item.	Snow Fighting		Removal		Amount.	% of Total
	Cost.	% of Total.	Cost.	% of Total.		
Supervis., D. S. C.	\$23,976	8.84	\$1,599	0.63	\$25,575	4.88
Inspection and checking	24,841	9.15	39,727	15.73	64,568	12.33
Labor, D. S. C.	40,805	15.04	1,785	0.70	42,590	8.13
Labor emergency	175,987	64.85	.....	.....	175,987	33.59
Equip., supplies & incidentals	5,747	2.12	4,443	1.74	10,190	1.95
Auto snow plows	.....	.....	2,948	1.16	2,948	0.56
Hired trucks, Dock, Dept.	.....	.....	240	0.09	240	0.04
Contract costs	.....	.....	201,794	79.95	201,794	38.52
Totals	\$271,356	100.00	\$252,536	100.00	\$523,892	100.00

"On the whole the first year's experience with the snow fighting force has been encouraging, and with slight modifications will be continued in service next



PUSHING SNOW INTO SEWER AND APPLYING WATER FROM HYDRANT TO SUPPLEMENT SEWAGE FLOW.

season. Certainly the results secured warrant the belief that practically all sewers can be used for the disposal of snow, including pipe sewers greater in diameter than 12 inches, when water from hydrants is used to supplement the ordinary flow of sewage. It has been demonstrated beyond reasonable doubt that the sewers are not injured if clean snow is deposited therein while the storm is in progress or before rubbish accumulates on the streets.

"The basic principle of the snow fighting plan, that of starting during the storm and fighting it, likewise proved satisfactory, though it is probable that with more adverse weather conditions, including low temperatures and a blizzard, it would not be possible to secure laborers in sufficient numbers to work while a storm is in progress. Yet even conceding this as a fact, there still remains the possibility of working after the storm is over, and using the sewers for snow disposal. It is quite apparent that speed can be increased and cost can be reduced by utilizing the snow fighting principle with disposal of snow in sewers."

A COLLOIDAL BITUMINOUS PAVEMENT.

During the past three years, Iola, Kansas, has laid on 28 of its blocks a bituminous pavement, which is a mixture of asphalt cement and pulverized clay or loam. The parties which are developing the method have been proceeding cautiously while studying details of construction and working out machinery for treating the mineral matter entering into the pavement.

A. W. Dow, of Dow & Smith, chemical engineers, says of this pavement:

The "National Pavement" is composed of asphalt cement mixed with pulverized clay or loam which may contain more or less sand or fine stone. Owing to the strong affinity for bituminous materials like asphalt cement possessed by the colloidal silica and silicates contained in clay and clayey soils, and also to the fine state of division of the pulverized clay, a very soft asphalt cement may be used in the mixture without danger of producing a pavement too soft for traffic. In this respect it has a distinct advantage over other types of bituminous pavements, for it is a well known fact that the softer the asphalt cement used the longer the life of the pavement, provided it is not so soft as to roll under traffic. As to the wearing qualities of this paving material no one can say from a practical experience, but, judging from its characteristics, it is hard to appreciate how it can be worn away. The wearing can not take place in a manner similar to the other types of bituminous pavements constructed with sand and coarse mineral aggregate. In these materials the coarse mineral matter slowly pulverizes under traffic and grinds away, but in the case of the National Pavement the clay is already pulverized to as fine a condition as possible and there can not be any further grinding of the particles. One great advantage which this paving material possesses over that of other bituminous pavements is that it is made of finely pulverized clay with little or no gritty particles contained in it. It will not have the same wearing effect on rubber tired vehicles which are now so much in use on our public highways.

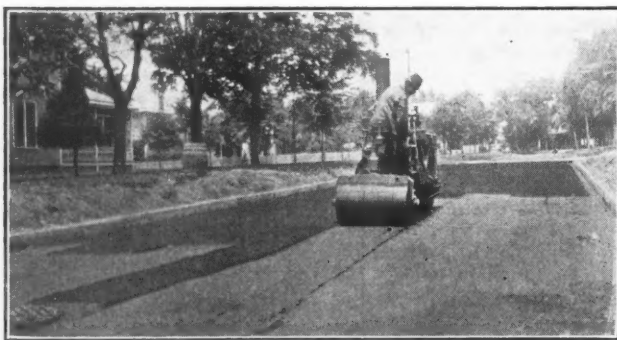
In constructing this pavement, a specially designed machine thoroughly pulverizes the soil which is fed into it (which may be that excavated from the road in grading), at the same time evaporating the moisture contained therein and heating all material to the degree necessary for uniform and easy mixing. The machine now in use is the third built by the company, each of the two last being an improvement over its predecessor. There are two drums, the inner of which has blades on the outer circumference. The outer drum acts as a heater. The inner revolves at a rate of about 600 r.p.m., and the blades, which are arranged normal to a helix so that the material is worked toward one end, throws the material against the outer drum. It is raised by flights on the



SPREADING BITUMINOUS MATERIAL.

inner surface of the outer drum (which revolves slowly) and as it falls back it is again caught by the blades, this process being repeated until all the earth is pulverized completely and comes out as flour. A screen prevents unpulverized particles from coming out. Any sand particles come out clean and bright.

The bituminous binder is then mixed with the pulverized, dried and heated material in a regular asphalt mixer. The product as it comes out resembles pulverized rock asphalt more than it does sheet asphalt, though it can be handled in the same way as the latter. It is hauled to the road, spread, and rolled when sufficiently cool. The material which has been used as mineral aggregate in Iola is a clayey sub-soil excavated from the street to be paved. This material, which is commonly known as gumbo soil in the middle west, is considered the most refractory soil or clay to work up into paving, yet it was readily pulverized and mixed with the asphaltic cement. Some of this pavement was laid over three years ago and is still in good condition. Concerning it Mr. Dow says: "It is smooth and there is little tractive resistance. At the same time it is noiseless under the hoofs of horses and sounds soft, although it does not mark nearly as badly as does a sheet asphalt pavement under the same temperature conditions. It has been subjected to considerable heavy traffic since being laid, the traffic consisting of heavy wagons loaded with dirt and with narrow iron tires." Most of the pavement has



ROLLING PAVEMENT.

been laid on a rolled and drained earth base, although some has been laid on top of an old brick pavement. While figures of the cost were not given, it would seem that this must have been less than for a sheet asphalt pavement, since the aggregate is obtained at no expense other than that of pulverizing it. The amount of asphalt binder used per cubic yard of pavement is almost exactly the same as for standard sheet asphalt; but owing to the use of very fine mineral aggregate only, the combination is said to be more than merely mechanical, being more

like a dense colloidal solution, as referred to in our issue of June 3rd.

MASSACHUSETTS SHADE TREE LAWS.

Important changes in laws regulating the care of public shade trees and shrubs are embodied in an act of the Massachusetts Legislature which was prorogued June 4. The laws are codified, a dozen or more earlier enactments being repealed. The more important provisions are:

The tree warden of a city or town is given the care of all public growths except on state highways, and in parks under jurisdiction of park commissioners. The warden shall expend all moneys appropriated and enforce the laws. No tree shall be planted on a highway without his approval, and in towns only on locations designated by the selectmen or road authorities.

All trees within or on the limits of public ways are deemed public shade trees, and where the ownership is in dispute owing to doubtful highway bounds, the presumption shall be that the tree is public property.

No tree shall be cut, trimmed or removed except by the warden or his deputy, or by his written authorization, nor shall the owner of the land on which a public tree stands cut or remove it. Before cutting down or removing any shade tree a public hearing must first have been held, on 7 days' notice. If before or at a hearing, objection is made in writing by one or more persons, a tree shall not be cut or removed except with the approval of the selectmen or mayor.

Tree wardens and deputies may cut and trim growths smaller than 1½ inches in diameter one foot above the ground, and on order of the mayor and aldermen, selectmen or road commissioners, shall trim or cut down growths considered dangerous or inconvenient to the traveling public.

Municipalities may appropriate money to be expended by the tree warden in planting trees either on public ways or on adjacent private land within 20 feet of such ways, with the owner's written consent, when for the improvement or shading of the street or way.

The State Highway Commission is given the care and control of all growths on state highways. Persons aggrieved at the Commission's acts may be awarded damages by the Superior Court of the county, in the same way as for the taking of land for highways.

Disfiguring trees by posting bills, signs or advertisements is forbidden under penalty of \$50 for each offence, and wanton injury or destruction to a tree or shrub not one's own is punishable by either a fine or 6 months' imprisonment. Careless injury to a shade tree by animals, etc., is punishable by a fine up to \$500, one-half to go to the complainant, the other half to the city or town.

PUBLIC BATHS AND COMFORT STATIONS.

The West 28th Street public bath, in Manhattan, N. Y., is believed to be "the most advanced example of institutions of this kind existing anywhere in the world. It combines the shower bath, plunge bath, the gymnasium, the roof playground and space for a public laundry, in a neighborhood that needs them." The quotation is from borough president Marks' annual report.

He further reports that in the various pool baths there has been installed a refiltration system which provides a constant circulation of clean, filtered water, the system proving most economical and efficient. The price for towel and soap has been reduced from 5 cts. to 2 cts.

In all the public comfort stations are vending machines which provide a towel and soap for one cent and a sanitary napkin for the same price. There is also in each busy station a pay toilet, which is opened by depositing a 5-cent piece in a slot machine attached to the lock.

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CHANGE OF ADDRESS

Subscribers are requested to notify us of changes of address, giving both old and new addresses.

Contributions suitable for this paper either in the form of special articles or of letters discussing municipal matters, are invited and paid for. Subscribers desiring information concerning municipal matters are requested to call upon MUNICIPAL JOURNAL, which has unusual facilities for furnishing the same, and will do so gladly and without cost.

JUNE 10, 1915.

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Issuing Reports Monthly.

"It has been my desire that the annual report of the business and transactions of the Borough of Manhattan for the year 1914 be submitted to the people with the least possible delay, and in such a form as to be of the greatest possible interest." With this as a foreword, Marcus M. Marks, president of Manhattan borough, made public on May 20th his annual report for the year 1914, by sending to the press multigraph copies of it. The printed copies probably will not be distributed for many months yet. Ordinarily reports of the several officials of New York appear in 18 to 24 months, when their contents are so antiquated that a newspaper is ashamed to refer to them and they receive practically no notice; and it could not be expected that any public action would be affected by them, since conditions may have changed greatly in the meantime.

Even though we recognize the wide range of activities of the borough president's office, which include the control of all the public works and public buildings, it does not seem exacting to expect a report on these within six months after the close of the year; but this is, we believe, the first time this has been even approached, and

we wish to compliment President Marks on this record. We hope that future reports of both himself and his successors will be not less prompt.

Are not the taxpayers entitled to prompt reports on the conduct of their business? And are not officials entitled to early consideration by the public of recommendations made by them? In fact, except for its historical value, of what use is a report of this kind which is a year or more old before the citizens obtain it?

Even if published promptly, some of the information given in an annual report is a year or more old before the report appears. Why wait a year? Many departments of the federal government, which is generally considered to be more conservative than any city government, issue, at intervals of a few weeks only, bulletins setting forth some of their activities, which are published in the daily press. Why should not every city department so keep its records that once a month it could furnish the daily papers of the city with a summary of its doings during the previous month, including expenditures and work accomplished, accompanied perhaps with a photograph or two of interesting work or of conditions which the people themselves should remedy (littered parks, streets and alleys, for instance). Nothing, we believe, so averts suspicion of their officials by taxpayers as publicity (unless the suspicions are justified), and on the other hand, nothing so excites such suspicions as secrecy or an idea that such is being attempted. Foster in the citizens an interest and pride in the work done by their municipal departments, and the majority will become supporters rather than critics of the officials.

Modern Fire Stations.

In our issue of May 13th we published descriptions of bungalow fire stations for small towns or outlying districts, and of two-story stations for housing ten to fifteen men with three or four pieces of apparatus. This week we describe a very complete station with accommodations for nine pieces of apparatus and forty-five men, the fire alarm apparatus and machine shop; there being tub and shower baths on each dormitory floor, as well as recreation and reading rooms.

The rapid introduction of motor apparatus with the resulting elimination of horses calls for designs differing from the old engine houses. They can be made more sanitary and pleasant when they are not part stable, and the reduction in room required for apparatus when no horses are involved leaves more for the conveniences and diversions of the men. This consideration for the firemen is as it should be, and we are glad to see that the fire commissioners of our cities are planning with this in view, as well as to have the architecture of the building exterior in keeping with that of the neighborhood in which it is located.

Snow Removal Methods.

The method of snow-removal which was worked out so thoroughly last fall for New York did not have a satisfactory trial last winter, as there were only two real snowstorms, and both of these were exceptional. It was apparently demonstrated, however, that the sewers will remove a large part if not all of the snow from half of the street area which is cleaned. The principle of beginning to remove the snow when the storm begins and not permitting it to accumulate appears to be impractical, however, both because it is so often impossible to tell at the beginning of a storm whether it will be a storm calling for snow fighting, and also because it is impossible to get the necessary number of extra men to come to and remain at work during the height of the storm.

The WEEK'S NEWS

Pennsylvania's Governor and Her Roads—Florida and Ohio Highway Reorganization—Cleveland and Philadelphia Sewage Disposal—The Wanaque Supply for New Jersey Cities—"White Ways" in South Pasadena, Leavenworth and Lowell—Perth Amboy's Municipal Lighting Plant—New York Firemen's Efficiency Ideas—New Auto Apparatus—Florida Cities' Legislation—Pennsylvania's Clark Act Amendments—Finances of New Jersey Cities—City Manager Elections—Pennsylvania City Planning Legislation Killed—Trees in Massachusetts.

ROADS AND PAVEMENTS

Governor Brumbaugh and Pennsylvania Roads.

Harrisburg, Pa.—One of the bills signed by the governor is that introduced by Senator Sproul to meet the views of the administration, amending the road act of 1911 in a manner to allow the state to lighten its payroll of the burden of a lot of highway officials. It foreshadows the removal of a number of the fifty district highway superintendents and minor jobholders, a good proportion of whom are said to be politicians under former Commissioner Bigelow. The amendment just approved says the highway commissioner "may" appoint the fifty superintendents and numerous other subordinates. The original wording of the act was that such employees "shall" be appointed.

Intimating that state-wide good roads days may come more than once a year, Governor Brumbaugh has urged every citizen of the commonwealth to constitute himself a vigilance committee of one to report any defects in roads which he may notice. The governor intimates that reports of poor roads or poor work may be made direct to the capitol if local authorities are not disposed to bestir themselves. Governor Brumbaugh said that the success of the good roads day had exceeded his expectations, and added that the number of such days ought to be limited only by the time which people can give. The state highway department announced that 76,996 men had been reported as having worked on the roads. About 6,000 miles of highways were worked over, and 13,500 teams were employed. These figures are complete for the state, with the exception of one or two counties, from which additional reports are expected.

The state highway department has officially taken over the 77 roads that were added to the original routes by the legislature in 1913. Nearly 300 main routes were designated as state highways in 1911 under the Sproul act. Little or no attempt will be made to rebuild any of these highways at present. Commissioner Cunningham said some weeks ago that because only \$6,000,000 are available for highways for the next two years only repair work will be done.

New Bridge Opened.

Hamilton, O.—Hamilton and Butler county celebrated in many ways the opening of the new Main and High street bridge. The bridge takes the place of the former single span steel one which was destroyed by flood March 25, 1913. A county emergency board was organized then which issued bonds for construction. The contract was awarded to the A. J. Yawger Co., Indianapolis, at a price of \$142,440.90. Work began May 11, 1914, and after some delay the structure was completed. About 12,000 barrels of Universal Portland cement were used. The Cincinnati Iron & Steel Co. furnished the 600,000 pounds of steel bars and 900,000 pounds of steel sheeting. The length is 576

feet and width 66 feet, with 10-foot sidewalks. The work was under the direction of County Engineer Fred M. Hammerle and Construction Engineer C. R. Hine and Assistant Construction Engineer Service of the county office.

State Road Commission for Florida.

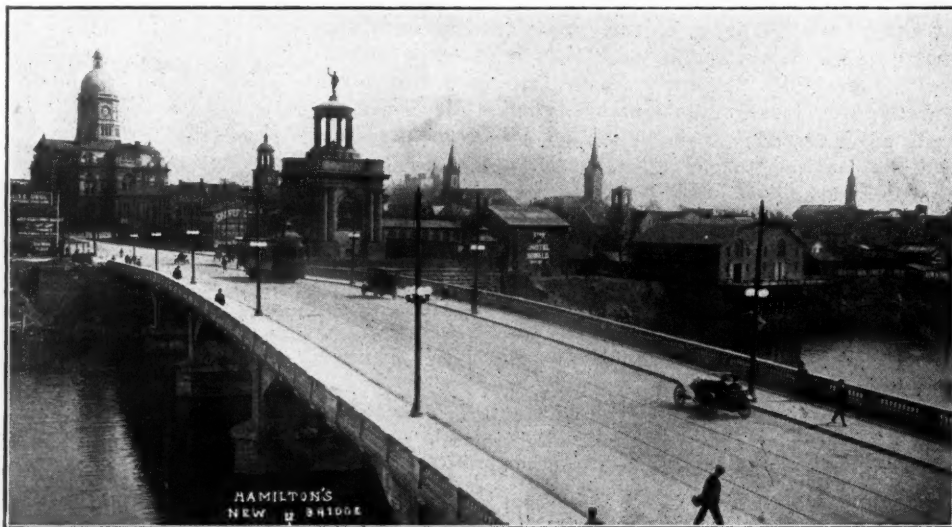
Tallahassee, Fla.—The senate bill creating a state highway commission with appointed commissioners in authority has been passed. Secretary J. P. Clarkson, of the Florida State Good Roads Association, is very much pleased over the bill, as this is a measure that the association has endeavored for six sessions of the legislature to have enacted. Representative Wood, of Pinellas, and Senator Himes are given credit for the passage of the bill.

Ohio Highway Code Passed.

Columbus, O.—Both branches of the general assembly have accepted the conference report on the Cass highway code. The house division of the road fund, 75 per cent for intercounty roads and 25 per cent for main market roads, was agreed to. Requirement was inserted that county commissioners' plans for intercounty roads must be approved by the state highway commissioner. The county surveyor's salary was slightly reduced.

To Take Road Material from Bay.

Riverhead, L. I.—The new state and county highway from Quogue to Southampton, over the Shinnecock Hills, will be constructed under rather novel conditions. Southampton town will itself take the contract to build the road, and all of the sand and gravel to be used, a quantity exceeding 16,750 cubic yards, will be taken from the bottom of Peconic Bay. The highway is to be a 10-foot road ten and one-half miles long. It will be of concrete construction for its entire length, 120,000 bags of cement being used. The state helps pay for it, but the town has voted to add four feet to the road for its entire length, at a cost of \$30,000, and making the road twenty feet wide. Hence it is estimated that the road, when completed, will contain about 150,000 bags of cement and over 20,000 cubic yards of sand and gravel. Owing to the fact that the town can make no profit and has submitted a low bid accordingly, it is estimated that the state and county will save from \$5,000 to \$10,000 on the road.



Courtesy, Hamilton (O.) Republican.
NEW BRIDGE AT HAMILTON, O.

SEWERAGE AND SANITATION

Help for Cleveland's Sewage Plant.

Cleveland, O.—Cleveland is to be given relief in the construction of its new sewage disposal plant, work on which has been tied up for lack of funds. Senator Fellingner of Cleveland, Attorney General Turner and Governor Willis have worked out a measure satisfactory to the governor on the tax question. Bonds issued will have to go to a referendum, unless they can be provided for within the limitations of the Smith 1 per cent tax law. It is the purpose of the city to issue \$2,000,000 bonds to complete the work. The bill was passed by the senate at Columbus and went to the house.

\$34,600,000 Sewage Disposal System for Philadelphia Urged.

Philadelphia, Pa.—A complete sewage disposal system for this city is provided for in a report just made to Mayor Blankenburg by Chief Webster, of the bureau of surveys. This system, providing for the future as far as 1950, would cost the city about \$34,600,000. Chief Webster's report is the result of a study of the problem by him and George E. Datesman, his principal assistant, and W. L. Stevenson, assistant engineer of the bureau of surveys. They began their work in 1908 and only finished it with the compilation of the report. In their investigation, Chief Webster and Mr. Datesman visited cities in Europe and this country, studying systems. An act of the legislature, approved April 22, 1905, started the work. This act was the result of evidence gathered showing the pressing necessity of protecting the public against water-borne disease. Under the terms of this act, the state commissioner of health was empowered to control the discharge of sewage into the waters of the state. As set forth in the report, the problem of sewage disposal confronting the city is fourfold:

"To collect and treat the sewage so as to protect the public health and to prevent undue pollution of the water taken from the Delaware river at the Torresdale water filters.

"To promote the comfort and prosperity of the people by abating the nuisance now existing due to sewage pollution of Frankford and Cobbs creeks, the lowest Schuylkill river and the docks of the Delaware river.

"To enhance development of the port and create attractive conditions by restoring and maintaining the rivers and streams in a clean condition.

"To accomplish these results promptly and progressively with the most economical expenditure of funds."

Definite plans to solve these problems are worked out in the report. The appropriations for construction, aggregating \$22,400,000, will complete the system of collectors and provide for the treatment of all the dry-weather flow of sewage and the first flush of rainfall. It is estimated that the operation and maintenance of these works will require annual appropriations of \$500,000, in addition to which appropriations of at least \$2,000,000 should be made each year for the construction of main and branch sewers to keep pace with the growth of the city. The collecting sewers recommended are of capacity ample for the year 1950, but before that time it will be requisite that the treatment of the sewage be carried to a greater degree of refinement. It is estimated that the extensions to the works to meet the conditions of the year 1950 will cost \$12,200,000, and will make a total cost of the completed system at that time of \$34,600,000. It is also recommended that co-operation be had between the states of Pennsylvania and New Jersey, so as to secure concordant action for the treatment of the sewage of communities in these states which is discharged into the Delaware river or its tributaries.

Meat Inspection Ordinance Legal.

Meridian, Miss.—The injunction suit filed by a number of meat market men and butchers, asking that the city be restrained from enforcing the meat market ordinance, and which was granted temporarily, has been dissolved by Chancellor Tann. The chancellor stated that he could find nothing in the meat market or slaughter house ordinance that was violating any state law, or of the constitution of the United States and that the city council had the right to enact the ordinance and put it into effect. He further said that the fees that were fixed might be a little too heavy, but this was a matter that the city council could decide and could regulate. It was set up in the petition for the

injunction that the ordinance was violating the anti-trust laws and that it tended to create a monopoly in restraint of business and worked a hardship on the smaller butchers.

City Must Pay for River Pollution.

Paterson, N. J.—Vice Chancellor Stevens, at Newark, has signed a decree fixing the amount of damages to be paid by the city of Paterson to riparian owners resulting from the pollution of the Passaic River, covering a period of two years, from March 26, 1915, to March 26, 1917. The latter date has been fixed as the time when Paterson will no longer use the river to drain the city's sewage. The damages aggregate approximately \$5,500.

Park Drain Mistaken for Spring—14 Sick.

Wilmington, Del.—Mistaking a waste pipe from a park toilet for a spring, four persons in this city were made ill with typhoid fever and ten others were made ill from other causes. The health authorities and the park commission have found the cause of the trouble and marked the pipe so future mistakes may be avoided. The party claimed to have drunk from a spring in Brandywine Park, but the authorities were unable to locate any polluted spring. Finally one of the children recovered sufficiently to take the officers to the park and point out the place.

WATER SUPPLY

Waterworks for Counties.

Columbus, O.—County commissioners may acquire, own and operate waterworks, water supplies and water systems by the terms of the Lynch senate bill passed by the house.

Dallas Waterworks Statistics.

Dallas, Tex.—The people of Dallas used 3,568,050,060 gallons of water during the year ending May 1, according to the annual report of Chief Engineer J. M. Bassett of the city water department, filed with Water Commissioner A. C. Cason. Consumption was increased 269,637,000 gallons over the preceding year. White Rock pumping plant now has been equipped with a sterilizing plant, through which all of the water is passed, Mr. Bassett says in his report. The total cost of operating the city's plants was \$90,222.44 for the year. There are 11,720 water consumers in Dallas who are using meters, while there are more than 13,000 consumers on the flat rate plan, according to figures prepared by Secretary-Collector John Evans of the water department in connection with his annual report. There are 25,000 consumers in the city. That the city will be metered throughout has been promised by the present administration.

Newark May Share in Wanaque Supply.

Newark, N. J.—Newark, in all probability, will share largely in the development of the Wanaque River watershed, even if it does not conduct the project alone. In either event an additional supply of potable water will be gained from this source within five years unless the state water supply commission reverses its present attitude. Representatives of Bloomfield, Glen Ridge, Harrison, Kearny, Nutley, the borough of Totowa and possibly of other municipalities hereabouts have conferred with the commission. Because of the vigorous protests of representatives of Paterson, Passaic and Montclair, it seems probable that Newark will not get Wanaque alone. The Wanaque watershed contains about eighty square miles in the northeastern section of Passaic county. The Wanaque River is in the area to be developed. Two plans have been proposed for impounding the waters and delivering them to the municipalities interested. One provides for the construction of a reservoir at Midvale, Passaic county, which would have an elevation at the flow line of 275 feet above sea level and a capacity of 11,000,000,000 gallons, which is more than the combined capacity of all the reservoirs in the Newark system. From this reservoir would extend a large pipe line, starting at the size of seventy-two inches, continuing with that diameter to Paterson, then reducing to 60 inches until Newark is reached and continuing at forty-eight inches in Elizabeth, the proposed point of final

delivery. The other plan contemplates a high level supply from a point near Greenwood Lake, where a small intake reservoir would be constructed. A pipe line forty-eight inches in diameter would carry from this reservoir a supply of 15,000,000 gallons daily at Little Falls 510 feet above the sea level at the point of delivery. Without pumping, this water could be distributed to the municipalities in the Passaic Valley. Chief Engineer Morris R. Sherrerd outlined these plans and made an estimate of the cost for the state water supply commission in 1911. The first, known as the low level plan, would cost slightly less than \$6,000,000, it is estimated. This includes \$1,000,000 for diversion rights, makes an allowance for land damages, and provides for the building of the pipe lines all the way to Elizabeth. The second, or high level plan, would cost \$3,500,000. The last session of the legislature passed a law providing that each municipality interested might pay \$200,000 for each million gallons of water needed daily. As introduced, this measure provided for the payment of \$300,000 for each million gallons daily, but one of the Paterson delegation in the house had the figures changed without notice being taken of the fact that the change might have crippled the project. The next legislature will be asked to make whatever changes are necessary.

STREET LIGHTING AND POWER

Company Fights Erection of Municipal Plant.

Perth Amboy, N. J.—City officials are to fight the certiorari proceedings brought by the Public Service Corporation to prevent the construction of the \$150,000 municipal lighting plant. Mayor Ferd Garretson and City Attorney Andrew J. Wright have so decided. In two long affidavits filed, the complainant sets forth the aldermen acted illegally, in that their actions did not conform to the act of the legislature approved July 5, 1906, governing the erection of municipal light plants. Among the reasons given are that the advertisements for bids on the bond issue and for bids on the construction of the plant were not properly advertised according to the statute; that the board of aldermen in authorizing Runyon & Carey to advertise for bids did not designate what kind of light plant and did not refer to plans and specifications; that the board of aldermen did not exercise their judgment or declare it expedient to construct the plant after the election last fall and that the bonds were not publicly sold.

New White Ways.

South Pasadena, Cal.—In the presence of crowds which included city officials of Pasadena, Alhambra, San Gabriel and other municipalities president of city council, Ernest V. Sutton, turned on the lights of the new white way. An automobile parade followed the ceremonies. The lamps used are nitrogen-filled and the globes are rather novel—being tulip-shaped instead of round.

Leavenworth, Kan.—Brass bands, parades and other forms of celebration marked the opening of the new white way in this city.

Lowell, Mass.—The biggest crowds ever seen on Lowell's streets turned out to celebrate the turning on of the lights of the new white way. Mayor Murphy touched the switch. There are 184 luminous arcs, covering over two miles of streets. Fireworks, parades and bands marked the celebration.

Gas Survey Cost \$20,000.

Springfield, Ill.—Commissioner Willis J. Spaulding has filed with the city council the expenses incurred incident to the gas investigation before the state public utilities commission. The total cost will amount to \$20,829.42, as estimated at this time, before the completion of the case. The items are distributed as follows: Edward W. Bemis, rate expert, \$1,558.95; Alton D. Adams, gas engineer and utility expert, \$9,360; William L. Corris, stenographer, for reporting 6,700 pages of record in hearing before state commission, \$2,026.80; Marwick, Mitchell, Peat & Co., public accountants, \$7,883.67. The city's investigation was going on for a year before the case was brought before the state commission.

FIRE AND POLICE

Firemen's Efficiency Idea Contest.

New York, N. Y.—As a result of the offer by Fire Commissioner Adamson last July of an "administration medal" to the member of the fire department who made the best suggestion for the improvement of the fire fighting efficiency of the force, no fewer than 5,000 firemen sent in their ideas. The committee to decide on the winner consisted of Commissioner Adamson, Deputy Commissioners W. Holden Weeks, Richard E. Laimbeer, Jr., Chief Kenlon, and the fifteen Deputy Fire Chiefs. It was difficult to select the best suggestion, but that submitted by Deputy Chief Patrick Maher was finally decided upon. His idea was that it was unfair not to keep a definite record of the efficiency of the members of the department. If they did anything unusually heroic in the life-saving way it was noted; and if they did anything unusually bad it was noted, either by dismissal or by some punishment, but between these two extremes there was no system of records. Deputy Chief Maher recommended that a system of giving due credits to the worthy men be worked out. This has since been done by a special board of officials and officers of the fire department, and it has been arranged that credit and demerit ratings shall be given, not on the opinions of the fire captains but on their statements of definite facts. From July 1 these awards will form part of the official records of the department and will be taken into account by the Municipal Civil Service Commission in making promotions. Many other valuable suggestions were commended.

New Fireboat in Service.

Tacoma, Wash.—A. U. Mills, commissioner of public safety, and the council and fire department officials are very well satisfied with the test of the new fire tug which will be used by the city under a lease agreement with the Foss Launch company. After the inspection the craft was accepted and is now on duty. The boat exceeded its pumping guarantee of 1,000 gallons a minute. Four streams can be thrown at one time. Commissioner Mills was authorized by the council to enter into a one year's agreement with the Foss Launch company at a rental of \$2,993 a year, or \$8.20 a day. The rental includes the services of two men, who will be on duty all the time.

New Fire Station Opened.

Marion, O.—The illustration on the next page shows the new Mark street fire station which has just been completed. The new building is attractively planned and comfortably equipped, and the men have taken possession.

MOTOR VEHICLES

Rochester Motorizing Its Department.

Rochester, N. Y.—Following a test of the new tractor for Truck 1, it has been placed in commission. This is the second of the motor-drawn trucks. In addition to this, there is the following motor apparatus in the department now: Four hose and chemical wagons, runabouts for Chief Charles Little, Assistant Chief Frank A. Jaynes and for the four battalion chiefs. There is also a motor-driven salvage wagon.

Combination Tested.

Williamsport, Pa.—The new combination chemical and hose motor truck for No. 4 engine company of the Williamsport fire department has been put through extreme tests and found satisfactory. The car was made by James Boyd & Bros. Company, of Philadelphia. Commissioner Perry S. Harman, superintendent of public safety, Vice-Mayor Charles E. Cole, Chief John Miles and City Controller H. B. Eberly were among those who were on the truck when it was tested. The car is equipped with cushion wheels and has an electric starter.

New Aerial Received.

Wheeling, W. Va.—Wheeling's new aerial truck, costing \$9,000, has arrived and been given preliminary trial runs. The truck is a 65-foot ladder, motor-driven combination, and has an automatic stop on the aerial ladder and the

turntable device for whirling about the 65-foot structure. It is so constructed that it can be raised in four seconds, and at any angle, without overbalancing the truck. The engine has a 110-horsepower motor which can drive the truck at a speed of 35 miles an hour. Chief Edward T. Rose and Mayor H. L. Kirk were very much pleased with the new apparatus. It was made by James Boyd & Bro., Inc., Philadelphia, Pa.

GOVERNMENT AND FINANCE

Charter Freedom for Florida Cities.

Tallahassee, Fla.—The senate has passed, by a vote of 14 to 8, the Farris home rule bill, giving to towns and cities the right to amend their charters without legislative action. The measure is designed to take from the legislature work which causes half of each session to be devoted to local bills and also is expected to give more satisfactory results. This bill provides that in each town or city there shall be elected a charter board which, in cities of over 20,000 population, will consist of fifteen members. This board only has the right to submit to the voters of the city charter amendments. Provision is made for holding elections and taking all other steps necessary for the people to pass on the method of changing their charters. The bill goes to the house, where it has strong support.

Amending Pennsylvania's Clark Act.

Harrisburg, Pa.—Greater powers are vested in the councils of third-class cities by the Walton bill, passed by the present legislature and practically assured of approval by the governor. The new statute amends the Clark act in many important particulars, and the new provisions are in line with recommendations of the Third-Class Cities' League, comprising 26 municipalities of that division in Pennsylvania. The Walton bill, besides making several technical amendments in the Clark act to make the law more clear, and consequently more valid, gives the city councils wider authority in establishing public convenience, pleasure and safety; provides for a uniform system of tax assessment, and establishes new provisions affecting the municipal officers and employees. Hereafter, when two or more townships or boroughs are consolidated into a third-class city, the bonds and floating indebtedness in each, contracted prior to the consolidation, shall be assumed as a joint indebtedness and the taxes for liquidation of the debt shall be uniform throughout the city. Moreover, all additions to third-class cities shall be liable for the bonded and floating indebtedness thereon of both the annexed territory and the city, under a uniform tax assessment system. Another amendment provides that funds accruing from the

mercantile license tax shall be "in addition to all other taxes levied and collected by the city, county or commonwealth," the proceeds being devoted to "general revenue purposes."

Still another amendment exempts all city bond issues from all state and local taxation. The Walton measure stipulates that the mayor shall serve for four years and shall be ineligible to succeed himself. Councilmen shall also be elected quadrennially. However, the Catlin bill, just enacted, providing that third-class city mayors shall be eligible to succeed themselves, conflicts with the above provision, and it will be up to the governor to remedy this defect. At the first municipal election held after the passage of the act, electors of third-class cities shall elect four members to the city council, to serve four-year terms, dating from the first Monday in the following January after the election. Elections shall occur every fourth year thereafter. Councilmen and mayors now in office shall serve out their terms. Additional authority is vested in the councils, so that they now have power to:

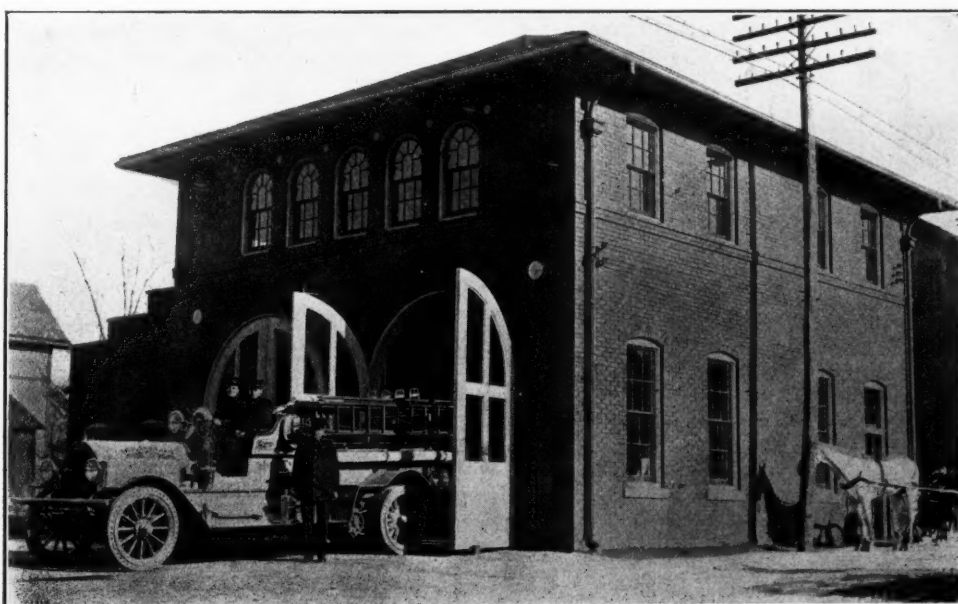
Provide for the trimming and care of shade trees. Order the police to arrest suspicious persons during any public gathering, such as at a circus, during a big holiday celebration, etc. To construct and maintain public bathhouses and boathouses. To maintain municipal milk depots. To purchase playgrounds and levy special taxes for upkeep. To regulate and control the production and emission of smoke from any chimney, locomotive, smokestack, or other source. To make the assessment for street improvements entirely upon property abutting the improved highway, thus saving the city's money.

Jacksonville's Charter Passes.

Jacksonville, Fla.—The Harrison charter bill for the city of Jacksonville has been passed by the house at Tallahassee and certified immediately to the senate. The charter provides for the commission form of government.

Investigating New Jersey Cities' Finances.

Trenton, N. J.—Members of the legislative commission for the survey of municipal financing are touring the state with a view to securing data pertaining to the systems of financing in the various municipalities. The commission consists of seven members: Arthur N. Pierson, of Union, president of the commission; E. Morgan Barradale, of Essex, secretary; George E. Dalrymple, of Passaic; Carlton E. Godfrey, of Atlantic county; Ogden H. Hammond, of Somerset; Archibald M. Henry, of Hudson, and Alonza D. Herrick, of Warren. The commission has already held several meetings. Many of the laws providing for the temporary and permanent financing of public obligations, the creating and safeguarding of sinking funds were passed many years ago, and there is a general feeling throughout the state that these laws should be amended to provide more adequately for present conditions. The commission's work is an effort to learn wherein the systems and methods employed for the conduct of public finances may be bettered and strengthened with a view of economy and greater security for the taxpayers. New Jersey is one of the very few states in the Union in which there is no supervisor or controller of municipal and county financing, and the investigations of city and county finances held throughout the state in the past ten years have revealed sufficient irregularities and unbusiness-like management of municipal and county funds to warrant the concern of the public that every safeguard should be thrown around the methods of creating as well as retiring public debt.



Courtesy, Marion (O.) Daily Star.

MARION'S NEW FIRE STATION.

No Buyers for Atlantic City Bonds.

Atlantic City, N. J.—Much to the surprise of members of the Board of City Commissioners, they did not receive a single bid from the New York or any other market for \$663,000 worth of city bonds on which they wanted to realize funds to carry out important municipal projects.

City Manager for Wheeling.

Wheeling, W. Va.—The Dayton plan charter was victorious over the present amended charter by 3,743 votes against 3,083, a majority of 660. The hottest fight of the election was waged on the proposition. The new plan, commission with city manager, becomes effective July 1, 1917.

City Manager Plan Defeated.

Dunkirk, N. Y.—The proposition to adopt a city manager plan of government for the city of Dunkirk was defeated by an almost three to one vote. There were 435 votes cast in favor of the plan and 1,099 against it. Not a single district in the city was carried for the proposition. The local Socialist party led the opposition, their antagonism to the change being that it did not contain the provisions of initiative, referendum and recall. The politicians of both parties worked hard against the change and numerous "scare" stories were circulated.

MISCELLANEOUS

Storms on Rampage Through Three States.

Topeka, Kan.—Wind, hail and rain spread damage over Kansas and sections of Oklahoma and Missouri. The rainfall averaged from two to three inches over the area. Hail at Great Bend did hundreds of thousands of dollars damage. The hail was accompanied by a wind which demolished many buildings. Atchison received a 3-inch rain. Leavenworth had a small waterspout. Reports from Northwestern Kansas showed rivers and tributaries rising rapidly. Many were killed by cyclones in Oklahoma and Missouri towns. Many thousands of acres of farm land were inundated and bridges wrecked. Flood danger seriously threatened Kansas City, Mo., and Kansas City, Kan.

City Planning Legislation Dead.

Harrisburg, Pa.—The W. J. Flynn city planning bill, introduced in the house by Representative C. L. Alexander, has been killed in the judiciary general committee. This precludes any further action on the bill. It was introduced in the house several weeks ago to give the planning commission additional power and was backed by William J. Flynn, manager of the Erie Board of Education and a member of the city planning commission who with others spent considerable time in Harrisburg lobbying for the bill. The bill was rushed through the house without a hearing, but got no farther in the senate than the judiciary general committee.

Erie, Pa.—The five members of the city planning com-

mission, headed by President William J. Flynn, have resigned. The reason given is the failure of the legislature to enact the city planning bill drafted by Mr. Flynn. The resignations accompany the report which council asked of the commission some time ago. The commission, consisting of W. J. Flynn, Rogers Israel, J. M. Cauley, Arthur N. Clements and Jacob Roth, felt that their hands would be tied and that they would not have power to accomplish anything. In their report they state that the work that is being done in the three-mile zone surrounding the city under the direction of the engineer of the commission, is progressing satisfactorily. The commission has contracted with L. Vincent Metz, engineer, to the extent of the funds now available on the books of the city to the credit of the City Planning Commission, for surveys, plats and maps, of lines and properties in unplotted sections of the city and in the three-mile zone surrounding the city. Council this year appropriated \$2,000 to the planning commission. The balance at that time was \$699.07 from last year's fund. When the commission went out of existence it left a balance of \$2,134.62 which reverts to the city. Following the definite resignation of the city planning commission, Charles H. English, city solicitor, commenced preparation of an ordinance to place planning affairs of the future in the engineering department.

Plan 320 Miles of Trees.

Worcester, Mass.—Plans for a highway circuit extending 320 miles across the state and back, passing through 57 towns and cities, all to be lined with trees, were considered at a conference of the Massachusetts Forestry Association. A committee was appointed to make the surveys. Shorter circuits are planned for the North Shore and South Shore, north and south of Boston, through the colonies of wealthy summer residents.

City Opposes Legal Decision on "Movies."

Albany, N. Y.—Albany city officials claim that under the provisions of a municipal law and the method of issuing licenses, they still can prevent proprietors of moving picture theatres from opening on Sunday. This is in spite of the decision of the Court of Appeals in a Yonkers case which in substance provides that moving picture theatres may not be prevented from operating on Sundays by means of municipal ordinances. It is understood that moving picture owners here contemplate opening Sunday. The decision sustained the lower court in discharging from prison one who was convicted of violating a city ordinance preventing Sunday moving picture productions.

Hydraulic Tunnel Filling.

Tacoma, Wash.—The accompanying illustrations show a rather novel use of hydraulic methods. The old Union Pacific tunnel had long proved a menace, having many times caved in. In order to fill it dirt was shot into it by cutting up the hill with water force from the huge nozzle.



Courtesy, Tacoma (Wash.) Ledger.

NOVEL METHOD OF FILLING TUNNEL.

LEGAL NEWS

A Summary and Notes of Recent Decisions— Rulings of Interest to Municipalities

Assessment for Sewer—Ground for Objection.

Lyon v. Mayor, etc., of Town of Hyattsville.—It is not ground for objection to an assessment for a sewer that the abutting property owner is not benefited by its construction.—Court of Appeals of Maryland, 93 F. R., 919.

Public Improvements—Assessments.

Gerlach v. City of Spokane.—Where lots had once been assessed for cost of drainage, such property cannot, though included in a subsequent improvement district, be assessed for surface drains necessary for other property.—Supreme Court of Washington, 147 P. R., 870.

Officers—Liability Of.

Pullen v. City of Eugene.—Though the mayor and councilmen of a city received no compensation for such services, they were liable for injuries received by reason of a defective way, where, with notice of the defects, they did not repair them, although authorized by the charter to do so.—Supreme Court of Oregon, 147 P. R., 768.

Creation of Municipal Corporation—Validity.

State on inf. of Lijegrist, Dist. Atty., v. Johnson et al.—The improper inclusion of land within a proposed port will not invalidate the proceedings for incorporation, where the quantity is so negligible that its inclusion could have had no appreciable effect on the election, and it does not infringe on the taxable property in any other port.—Supreme Court of Oregon, 147 P. R., 926.

Streets—Establishment—Prescription.

Dickinson et al. v. Delaware, L. & W. R. R. Co.—A public way by prescription may be acquired in a road upon a railroad's land, not a part of its right of way, but connecting two public streets, and may be established by proof of a continuous public user for more than 20 years, acquiesced in by it without any act showing that it was not its intention to subject its fee to the public use.—Court of Errors and Appeals of New Jersey, 93 A. R. 703.

Drains—Surface Water—Nuisance.

Stoecker v. City of Cedarburg.—A city has the right to improve its streets and to change the natural course of surface water by constructing a drain within the limits of its streets, even though such improvement changes the natural flow of surface water onto adjoining land; and, where such improvement does not increase the flow of the surface water upon plaintiff's lower land or create a nuisance, the city is not liable.—Supreme Court of Wisconsin, 152 N. W. R., 445.

Opening of Streets—Payment to Property Owners.

Tiedt et al. v. Village of Argyle et al.—A village may properly, under some circumstances, pay a property owner for the opening of a street across his property. The court will not enjoin such expenditure, unless its illegality is made to appear. Vague allegations that the expenditure is an extravagant waste of funds, without stating any facts on which the court can form a judgment, are not sufficient to warrant an injunction.—Supreme Court of Minnesota, 152 N. W. R., 412.

Amendment to Charter—Election—Sufficiency of Ballot.

State on inf. of Hedges, Dist. Atty. v. Anderson et al.—Under an ordinance providing that charter amendments submitted by the city council without initiative petitions shall be designated on the ballot "Charter Amendments Submitted to the Voters by the City Council," a ballot for a special city election to vote solely upon a bill for an act to amend the city charter by providing for a water supply, to issue bonds therefor, and to create a construction commission, not containing the prescribed designation, was sufficient, as it informed the voters so that they could intelligently express their will; mere irregularities in the form of a ballot, not preventing a full and free expression of the will of the electors, being immaterial, and not vitiating the election.—Supreme Court of Oregon, 147 P. R., 527.

Removal of Officers—Discretion of Council.

Rutter et al. v. Burke et al.—A charter provision, giving a city council power to remove its appointees for incapacity, negligence, and bad conduct, "as to it shall seem sufficient," limits its discretion to cases where one of these causes is found to exist.—Supreme Court of Vermont, Chittenden, 93 A. R., 842.

Ordinances—Validity—Motives of Members of Council.

Hadacheck v. Alexander.—Motives of members of a city council adopting an ordinance regulating an occupation and prohibiting the pursuit thereof in a residential district will not be inquired into in determining the validity of the ordinance, the propriety of which is solely for the council.—Supreme Court of California, 147 P. R., 259.

Hitching Posts—Nuisances—Public Authority.

Kent et al. v. City of Harlan et al.—Though hitching posts on a street are not a "nuisance per se," when authorized by the proper authorities, they may become a nuisance in fact, and, if so, no authority is conferred on the city to maintain them as such.—Supreme Court of Iowa, 152 N. W. R., 6.

Streets—Objection to Maintain—Dedication.

Curran v. City of St. Joseph.—While the mere dedication of a street and approval thereof by the city does not require the city to maintain and repair it as a street for the use of the public, those obligations arise when the city devotes a highway to the use of the public, or invites the public to use it as a street.—Supreme Court of Missouri, Division No. 1, 175 S. W. R., 584.

Contracts—Validity.

Town of Tempe v. Corbell.—A contract by a town council for the employment of a person to sprinkle the streets for a year beginning a few days before a new council would assume office, and executed after the election of the new council, is void, as contrary to public policy, and the new council may terminate it at will.—Supreme Court of Arizona, 147 P. R., 745.

Street Improvements—Apportionment of Costs.

City of Rolla v. Schuman et al.—Under Rev. St. 1909, § 9405, requiring that the cost of paving street intersections shall be "prorated against the lot or pieces of ground in such block or square abutting on the street improved," it was proper to tax all the cost of paving an intersection against the lots abutting on the improved street and none against those abutting on the intersecting street.—Springfield Court of Appeals, Missouri, 175 S. W. R., 241.

Injunction—Breach of Ordinance.

Board of Health of City of Grand Rapids v. Vink.—A court of equity had jurisdiction to enjoin defendants from violating a city ordinance forbidding others than licensed garbage men to remove garbage, on allegations showing that, besides the nuisance created, the city had a financial interest in the matter by virtue of a contract by it to furnish the garbage to another, and enforcement of the penal law would not afford adequate relief.—Supreme Court of Michigan, 151 N. W. R., 672.

Assessments—Reversal.

In re West Wheeler Street, City of Seattle, v. Ankeny et al.—Rem. & Bal. Code, §§ 7797, 7798, provide that, when an assessment roll has been confirmed, an appeal therefrom shall not invalidate or delay the judgment, except as to the property owners appealing. On the appeal of some of the property owners an assessment roll was vacated. The Supreme Court, in reversing, directed a revision of the assessment so that the cost of paving which was solely for the benefit of the one class of the property should be assessed against it and be deducted from the assessment against another class of property not benefited. Many of those whose property was not benefited did not appeal and paid their assessment. Held that, as a judgment, though of the Supreme Court, speaks only with reference to the parties and their privies, those property owners who did not appeal and paid their assessment were not entitled to have the assessment roll revised for their benefit.—Supreme Court of Washington, 147 P. R., 873.

THE MUNICIPAL INDEX

In Which Are Listed and Classified by Subjects All Articles Treating of Municipal Topics Which Have Appeared During the Past Month in the Leading Periodicals.

It is our purpose to give in the second issue of each month a list of all articles of any length or importance which have appeared in all the American periodicals and the leading English, French and German ones, dealing more or less directly with municipal matters. The index is kept up to date, and the month of literature covered each time will be brought up to within two or three days of publication. Our chief object in this is to keep our readers in touch with all the current literature on municipal matters. In furtherance of this we will furnish any of the articles listed in the index for the price named after each article, except that where an article is continued in two or three issues of the paper, the price given is for each of said issues. In addition to the titles where these are not sufficiently descriptive or where the article is of sufficient importance, a brief statement of its contents is added. The length also is given, and the name of the author when it is a contributed article.

ROADS AND PAVEMENTS.

Highways and Roads.

Dixie Highway. By H. F. Wiltse, Secretary Chamber of Commerce, Chattanooga, Tenn. 2 ills., 3,500 words. Southern Good Roads, May. 10 cts.

Road Situation in the Upper Peninsula of Michigan. By K. I. Sawyer, district engineer. 3 ills., 2,000 words. Better Roads and Streets, May. 15 cts.

County Road System of Allegheny County, Pa. Description and mileage of roads built, their method of construction and cost. By George D. Steele. 3 ills., 5,000 words. Better Roads and Streets, May. 15 cts.

Features of Highway Work in Hawaii. 7 ills., 2,700 words. Good Roads, May 1. 10 cts.

Philadelphia Highway Work. Use of granite block in street railway tracks and wood block near schools and hospitals; better paving brick secured by careful inspection; unit cost record system. 1 ill., 4,500 words. Municipal Journal, May 6. 10 cts.

Organization of Road Work Under Illinois Highway Commission. Work of original commission; organization and work of present commission; general policy of road construction; contract prices on state-aid work. 9 ills., 4 pages. Engineering and Contracting, May 26. 10 cts.

Construction.

Efficiency in Methods and Equipment on Illinois Paving Work. By Charles B. Stivers. 7 ills., 1,500 words. The Contractor, June 1. 20 cts.

Industrial Railway Equipment in Road Construction. Discusses the type of equipment used and gives several examples of successful application. 8 ills., 3,500 words. The Contractor, May 1. 20 cts.

Portable Railway in Highway Construction. Some costs are given for operation of portable railways on road work; general methods. 4 ills., 1,500 words. Good Roads, May 1. 10 cts.

Utilization of the Motor Truck in Highway Work. Records and costs of operation for motor trucks in use in road construction in various sections; their use in snow removal and road oiling. 22 ills., 10,000 words. Good Roads, May 1. 10 cts.

Experience in Paving By Day Labor at Duluth, Minn. Pavement is described and some costs are given. By John Wilson, city engineer, 1,000 words. Engineering and Contracting, May 19. 10 cts.

Efficiency and Economy of Road Machinery in Building Township Roads. From a paper by S. H. Chauvenet. 3,500 words. Highway Contractor, May. 10 cts.

Oiling and Dust Prevention.

Dust Prevention: Method of Application and use of the Various Oils. 2,000 words. Contract Record, May 26. 15 cts.

Dust Prevention by Use of Oil. Method of handling and of applying on road surfaces. Notes on amount to be used, quality, etc. 1,800 words. Canadian Engineer, May 20. 15 cts.

Dust Prevention. Paper by Maj. W. W. Crosby at Canadian and International Good Roads Congress and discussion by A. T. Laing. 3,000 words. Canadian Engineer, May 6. 15 cts.

Oiling of City Streets. Instruction regarding preparation of the street, grading, application of oil, its cost, etc. 2,500 words. Canadian Engineer, May 27. 15 cts.

Methods of Applying Oil for Dust Prevention. Abstract of bulletin on Dust Prevention by Ohio State Highway Department. 1,800 words. Engineering and Contracting, May 12. 10 cts.

Surface Oiling of City Streets. Oils suitable for dust suppression; method of preparing street and applying oil; results and costs. 2,200 words. Municipal Journal, May 13. 10 cts.

Maintenance.

Road Maintenance. Maintenance of surfaced roads outside of city paved streets and not including city pavements. By Col. W. B. Sohler, Chairman Massachusetts Highway Commission. 3,000 words. Better Roads and Streets, May. 15 cts.

Maintaining Earth Roads. Describes proper treatment for maintaining earth roads, types of machinery needed, cost and method of construction. 6 ills., 5,000 words. Better Roads and Streets, May. 15 cts.

Maintenance and Reconstruction of Macadam Roads. Covers raveling, ruts, sprinkling, mud removal, patching. By George D. Steele. 3,500 words. 4 ills., Better Roads and Streets, May. 15 cts.

Paving.

Baltimore's Experience in Paving Street Railway Tracks. Describes practice in Baltimore. By H. D. Williar, Jr., Asst. Eng. 4 ills., 1,200 words. Engineering News, May 6. 15 cts.

Some Problems of Street Paving in Large Cities. By Henry Welles Durham, consulting engineer. Ill., 40 pp. Municipal Engineers Journal, May. 50 cts.

Current Paving Practice. Information from tables published in February 4 issue. 700 words. Municipal Journal, May 6. 10 cts.

Asphalt.

What is Asphaltic Concrete? Lack of definiteness in meaning of this term; desirability of limiting character of mixtures to which it is applied. 1,100 words. Municipal Journal, May 20. 10 cts.

Evolution of Asphalt Pavement Construction in Toronto. By George Powell, deputy city engineer. 1,700 words. Contract Record, May 19. 15 cts.

Sand-Asphalt May Solve Florida Road Problem. Section built by hand mixing method gives good results after two years of service. Considerable mileage is now under construction and more is contemplated. By Charles E. Foote. 4 ills., 1,500 words. Engineering Record, May 15. 10 cts.

Resurfacing Worn-Out Highways with Asphaltic Tops. Describes preparation of old pavement and laying of new surface. By D. T. Pierce. 3 ills., 1,000 words. The Contractor, May 1. 20 cts.

Wood Fiber and Asphalt as Paving Materials. A pavement more nearly noiseless than wood block and less slippery than asphalt; method of laying and materials used. 4 ills., 1,200 words. Municipal Engineering, May. 25 cts.

Mining of Kentucky Rock Asphalt and the Construction of Rock Asphalt Macadam Roadways. Describes quarrying rock asphalt; gives rock asphalt specifications for new construction and for reconstruction and describes method of laying. By George D. Steele. 3,500 words. Better Roads and Streets, May. 15 cts.

Brick.

Replacing Brick Over Excavations. Details necessary for securing a good job; return all earth excavated, clean toothing, compact cushion, grout carefully. By P. J. Masterson. 3 ills., 1,200 words. Municipal Journal, May 6. 10 cts.

Bituminous.

Bituminous Penetration Roads in Massachusetts Equal Those Built by the Mixing Method. Success attributed to use of large stone in top course, application of binder under pressure and careful attention to construction details; tar sand method the newest feature. 6 ills., 2,000 words. Engineering Record, May 15. 10 cts.

Granite.

Redressed Granite Block Pavement. Abstract of practice in several eastern cities, cost data, etc. 9 ills., 2,400 words. Engineering News, May 27. 15 cts.

Concrete.

Concrete Paving Between Street Car Rails in Minnesota. Describes method of construction in which no expansion joints were used; mixtures. By Stanley

E. Bates. 6 ills., 1,700 words. Better Roads and Streets, May. 15 cts.

Some Methods and Costs of Concrete Pavement Construction at Des Plaines, Illinois. Description of pavement, under-drainage, sub-grade and method of laying; costs. By M. P. Taylor. 2 ills., 2,000 words. Engineering and Contracting, May 19. 10 cts.

Method of Estimating the Cost of a Concrete Road. Considers cost of material, mixing and hauling, water, etc. 1,200 words. Engineering and Contracting, May 19. 10 cts.

Method of Determining Spacing of Joints in Concrete Pavements or Roads. Mathematical method of determining by considering co-efficient of expansion and the elasticity of concrete. By H. J. Fixmer. 1,000 words. Engineering and Contracting, May 5. 10 cts.

Building a State-Aid Concrete Road in Cook County, Ill. Deals with the methods of preparing subgrade and laying concrete; describes plant used; discusses the new Illinois specifications. 5 ills., 3,000 words. The Contractor, May 1. 20 cts.

Slag.

The Use of Slag in Road Construction. Describes the kinds of slag, sizes suitable for use and method of construction and maintenance. By George D. Steele. 4 ills., 3,000 words. Better Roads and Streets, May. 15 cts.

Wood Block.

Experiments with Wood Paving Blocks. Eight years' tests of seven species of wood and different angles of courses, conducted by U. S. Forest Service and city of Minneapolis; relative average wear and local depressions. By Clyde Teesdale. 2 ills., 3,500 words. Municipal Journal, May 6. 10 cts.

Essential Points in the Construction of Wood Block Paving. Considers timber, size of blocks, creosote or oil filler, amount of oil, treatment, foundation, cushion, crown, expansion joints, laying and rolling blocks, maintenance, etc. By Henry L. Collier. 2,500 words. Proceedings of the Engineering Association of the South, Vol. 26, No. 1. 50 cts.

Miscellaneous.

Drainage of Earth Roads. Notes on the essential features of surface and under-drainage. Notes on cross drains and pipes. 2 ills., 2,700 words. Canadian Engineer, May 13. 15 cts.

Road Foundation. Discussion of various materials such as broken stone, gravel and concrete for foundation. 1,000 words. Municipal Journal, May 6. 10 cts.

Assessing Cost of Street Improvements. Scientific method of assessing cost. By G. M. Hall. 2 ills., 1,500 words. American Municipalities, May. 20 cts.

Price and Cost of A Road. Discusses the elements entering into the price which must be paid for a road, including not only the cost but the administrative and maintenance charges. By H. E. Bilger. 3 ills., 3,000 words. Municipal Engineering, May. 25 cts.

Accurate Daily and Total Cost Sheets for the Paving Contractor. Gives forms suitable for making daily reports and describes method of cost keeping. By C. B. Montgomery. 2 ills., 1,200 words. Contract Record, May 5. 15 cts.

SEWERAGE AND SANITATION.

Treatment.

Sewage Treatment Plant at Calvert, Texas. A small but very complete plant consisting of a screen chamber, settling tank, disinfecting plant and final settling tank. By Thomas L. Fountain. 9 ills., 4,200 words. Engineering News, May 13. 15 cts.

Sewage treatment for a Small Sanatorium. A 25,000 gallon per day plant consisting of a screen chamber, sedimentation tanks, intermittent filters, a subsurface absorption system and disinfecting apparatus. By R. F. MacDowell.

5 ills., 1,500 words. Engineering News, May 27. 15 cts.

Inhoff Tanks and Sprinklers for Sewage of Brighton District, Rochester, N. Y. Power will be developed at the plant by Pelton wheels operated by sewage under 69 feet head after suspended matter has been removed by screens and detritus tank. Large sludge storage capacity is provided. 6 ills., 3,000 words. Engineering Record, May 29. 10 cts.

Sewage-Treatment Experiments with Aeration and Activated Sludge. Aeration of raw sewage without the addition of sludge; aeration with sludge; composition of sludge. By Edward Bartow and S. F. W. Mohlman. 1,500 words. Surveyor, May 21. 40 cts.

Design Features of New Sewerage Works at Edmonton, Alta. Describes design and construction. 2 ills., 1,200 words. Engineering and Contracting, May 5. 10 cts.

Constructing Storage Tanks in East. Describes briefly construction of Glasstonbury outfall sewage works. By J. I. Alves, resident engineer. 1,500 words. Surveyor, May 21. 40 cts.

Design, Construction and Operation of Sewage Treatment works at Lethbridge, Alta. 1 ill., 4,500 words. Engineering and Contracting, May 5. 10 cts.

Processes Available for the Treatment of Industrial Wastes. Classifies wastes and gives methods of treatment available; sludge; oxygen demand; design of work. 3,500 words. Contract Record, May 12. 15 cts.

Degree of Purification Desirable and Practicable in Sewage Treatment Plants in Iowa. 2,800 words. Engineering and Contracting, May 26. 10 cts.

Sewage Disposal in Chilliwack. Unusual kind of tank or "separator" for clarifying sewage; laying sewers and building pumping station in quicksand; details of electrically driven pumping plant. By D. P. Dunn. 1 ill., 2,000 words. Municipal Journal, May 20. 10 cts.

Sewers.

Tests of Circular and Egg-Shaped Concrete Sewer Pipe for the City of Philadelphia. By Albert T. Goldbeck, assistant engineer, Bureau of Surveys. 3 ills., 3,000 words. Concrete-Cement Age, May. 15 cts.

Underflow Water Supply at Moline, Kansas. Lines of sewer pipe with open joints intercept the flow and convey it to a receiving well. By W. L. Benham. 1,000 words. Engineering News, May 13. 15 cts.

Miscellaneous.

Storm Water Inlets. Information concerning dimensions and construction of inlet openings, inlets and catch basins in several hundred cities. 6 ill., 4,500 words. Municipal Journal, May 20. 10 cts.

Direct Connected Inlet vs. Catch Basin. Former used exclusively in Gallon, Ohio; sightliness, low cost and better sanitation are advantages claimed. By A. F. Unckrich, Director Public Service. 1,200 words. Municipal Journal, May 20. 10 cts.

WATER SUPPLY.

Waterworks.

Statistics of Water Works in the United States. Gives source of supply, pressure, method of purification, number of meters, cost and annual maintenance. 4 pp. Fire and Water Engineering, May 5. 10 cts.

Features of the Cincinnati Water Works. Describes old apparatus, new water works design, the river pumping station, filtration plant and distribution system. By S. G. Pollard. 4 ill., 3,000 words. Fire and Water Engineering, May 5. 10 cts.

A Few Interesting Things About the Cincinnati Water Works. By C. R. Hebble. 6 ills., 1,200 words. American City, May. 25 cts.

Ground Water Supplies. Notes on quality, on relative merits of different wells and on their construction. 1 ill., 1,200 words. Canadian Engineer, May 20. 15 cts.

Duluth Water System. History of plant; construction; revenue and expense. 1 ill., 1,800 words. Fire and Water Engineering, May 12. 10 cts.

Municipal Water and Light Plant of Kansas City, Kansas. Success of municipal water and light plant has induced the city to enlarge them; brief history of plant; improvements, past and future. By P. W. Morgan. 2 ills., 2,500 words. Municipal Engineering, May. 25 cts.

Columbus Waterworks Makes its Own Alum. A Revolutionary Step in Water Purification Practice. Syrup used instead of crystals; method of making; cost of raw materials. By Charles P. Hoover, chemist in charge. 2 ills., 2,500

words. Engineering Record, May 8. 10 cts.

Englehart, Ont., Water Works. Description of a plant in a small town in northern Canada. 5 ills., 1,200 words. Contract Record, May 19. 15 cts.

Data on the Cost of Installing Small Water Works Systems in Massachusetts. Describes briefly and gives cost of several small plants in Massachusetts. By Harry R. Crohurst. 15 ills., 7,000 words. Engineering and Contracting, May 26. 10 cts.

Water Supply and Fire Protection. Determining quantity needed; proportion of total cost chargeable to fire protection; high pressure; size of mains. By C. M. Saville, chief engineer, Hartford, Conn., Water Department. 1,800 words. Fireman's Herald, May 8. 5 cts.

Partridge Island Water Supply, St. John, N. B. Description of the laying of the pipe line of flexible bronze tubing for carrying supply from city mains to island; notes on old and new pipe line. By F. G. Goodspeed, district engineer. 3 ills., 1,500 words. Canadian Engineer, May 27. 15 cts.

Water Works Statistics for 1914. Supplementary tables of pipe, appurtenances and meters set and waste prevention. 2 pp. Municipal Journal, May 27. 10 cts.

Purification.

New Filtration Plant at Quincy. Description of filter beds and head house; report of official test; construction. By W. R. Gelston, superintendent. 1 ill., 4,000 words. Fire and Water Engineering, May 5. 10 cts.

Brass Screen Between Sand and Gravel Eliminated in Cincinnati Filter Reconstruction. Frequent breaks by old system; graded layer of heavier gravel now used. By J. W. Elms, superintendent of filtration. 1 ill., 2,500 words. Engineering Record, May 8. 10 cts.

Operations of the Cincinnati Water Filtration Plant for 1914. Nineteen million gallons of water was pumped from the Ohio river to settling reservoirs, coagulated with sulphate of iron and lime and passed through mechanical filters. Liquid chlorine also used part of the time. From the official report by J. W. Elms, superintendent. 3 ills., 1,500 words. Engineering News, May 6. 15 cts.

Water Coagulation, Sedimentation and Aeration Plants at Norristown, Pa. By S. Cameron Corson, Borough Surveyor. 2 ills., 600 words. Engineering News, May 6. 15 cts.

Water Filtration Plant at Quincy, Ill. Description of a new and modern water filtration plant which replaces one of the oldest mechanical filter plants in the country. By W. R. Gelston, superintendent. 1,500 words. Municipal Engineering, May. 25 cts.

New Sedimentation Basin will Halve Costs of Sand Cleaning at Philadelphia Filters. Turbidity load on Torresdale Plant will be greatly relieved, algae growths prevented, and output of filtered water considerably increased. By Francis D. West, chemist in charge. 4 ills., 4,000 words. Engineering Record, May 8. 10 cts.

Dry-Feed Apparatus Solves Ithaca's Coagulant Problem. Helical conveyor with four sets of gears for variable speed regulation installed at city filters. By Henry N. Ogden. 2 ills., 1,000 words. Engineering Record, May 8. 10 cts.

Baltimore Filters Abound in Useful Hints on Concrete Construction and Design. Design involved special features, including handling of wash-water in settling reservoirs, drainage system of the plant, effluent piping details, head house arrangement and pumping station. By James W. Armstrong. 6 ills., 3,700 words. Engineering Record, May 8. 10 cts.

Slow Sand Filtration of Water. A discussion of the usefulness of the slow sand filter, of the physical and biochemical action involved, and of bacterial purification, with references to results obtained at other places. By Joseph Race, city bacteriologist and chemist, Ottawa. 2 ills., 6,000 words. Canadian Engineer, May 25. 15 cts.

Test of Filter Rate Controllers. Results of test by St. Louis Water Department to determine accuracy, reliability and merit of design of controllers for new filters. By Edward E. Wall and G. G. Black. 2 ills., 1,800 words. Engineering News, May 6. 15 cts.

Use of Liquid Chlorine at Buffalo Water Works Intake. By H. F. Wagner, chemist. 3 ills., 1,200 words. Engineering News, May 6. 15 cts.

Akron's Water Purification Plant. Dam, filtration plant, pumping plant and distributing reservoir nearing completion; special feature of filter is the strainer bottom; head created by dam

utilized for power for pumping and light. 3 ills., 4,000 words. Municipal Journal, May 27. 10 cts.

Reservoirs.

City Reservoir, Regina. Gives general design of new reservoir; describes construction and waterproofing and gives costs. 5 ills., 4,000 words. By R. O. Wynne-Roberts. Surveyor, May 7. 40 cts.

Design and Construction of the North Side Reservoir of the Pittsburgh Water Works. 6 ills., 4,000 words. Concrete-Cement Age, May. 15 cts.

Repairing and Waterproofing the Nashville Water Works Reservoir. A section of wall was rebuilt and the interior face of the old and new wall was waterproofed with cement gun plaster, bottom of the basin was waterproofed with asphalt felt and covered with concrete slabs. By W. W. Southgate. 3 ills., 3,000 words. Engineering News, May 6. 15 cts.

Stripping Water Works Reservoir. Logarithmic probability paper has been used to plot the growth of organism in stripped and unstripped reservoirs. The former show no advantage over the latter. By Allen Hazen and George C. Whipple. 1 ill., 2,000 words. Engineering News, May 6. 15 cts.

Pumps.

Low-Lift Centrifugal Pumps at Akron will Operate Under Unusually Varied Conditions. Shop tests show 79.6 per cent. efficiency for single-stage pumps. By F. A. Barbour. 1 ills., 1,800 words. Engineering Record, May 8. 10 cts.

Electricity in Water Works Plants. Includes a description of some of the electrical pumping plans in Iowa cities. Gives some costs of operation. By L. E. Darling. 3,500 words. Electrical Review, May 8. 10 cts.

Some Practical Suggestions and Data on the Installation and Operation of Air Lift Pumping Systems. By C. M. Wetherill. 2,000 words. Engineering and Contracting, May 12. 10 cts.

Pipes.

Reclaiming 40-Inch Intake Pipe in the Ottawa River for the City of Ottawa. Pipe which has lain in the river bed for twenty-five years was raised, taken ashore, repaired and is now being relaid. By L. McLaren Hunter. 10 ills., 1,500 words. Journal of Municipal and County Engineers, May. 60 cts.

End Pressure Broke 60-In. Cast Iron Water Main in Cincinnati. Conclusions reached by John W. Alvord after a thorough examination of break. 3 ills., 1,700 words. Engineering Record, May 8. 10 cts.

Conduits.

Constructing the Los Angeles Aqueduct. Design and method and cost of constructing the Los Angeles City trunk line, connecting aqueduct to distribution system. By B. A. Heintz, secretary to chief engineer. 14 ills., 5,500 words. Engineering and Contracting, May 5. 10 cts.

Direct Control over Construction Materials is Feature of 100-Mile Winnipeg Aqueduct. Six cities form water district; project; source of supply; construction railroad; aggregate for concrete; construction methods. 3 ills., 3,000 words. Engineering Record, May 8. 10 cts.

Catskill Aqueduct Tunneling. Now being driven under unusual difficulties to bypass tunnel in unstable rock; handling material, water and men. 4 ills., 1,600 words. Municipal Journal, May 27. 10 cts.

Meterage.

Review of Meterage in the United States. Considers care and maintenance of meters; rates; effects of meterage; who should pay for the meter. 5 ills., 3,000 words. Fire and Water Engineering, May 5. 10 cts.

Experience in Metering the City of Boston. Covers campaign of education to overcome opposition; metering multiple services; setting meters and avoiding frost. 2,500 words. Engineering and Contracting, May 12. 10 cts.

Meter Maintenance Systematized by Waterworks Department in Milwaukee. Sand causes meter trouble; shop for testing meters. 1 ill., 2,000 words. Engineering Record, May. 10 cts.

The Meter Repair and Testing Shop of the Milwaukee Water Works. Description of the shop; organization. By O. F. Poetsch, superintendent of meters. 4 ills., 1,000 words. American City, May 25 cts.

Miscellaneous.

American and New England Water Works Associations. Editorial. 1,100 words. Municipal Journal, May 27. 10 cts.

Water Works Publicity Measures Employed at Terre Haute, Ind. Method of teaching public the operation and the

difficulties of operating a water works system. 1,500 words. Engineering and Contracting, May 5. 10 cts.

Valuation of Water Works Property. The first of a series of twelve articles on waterworks valuation. This one covers inventorying of water works plants. By H. P. Gillette, Editor-in-Chief. 3,300 words. Engineering and Contracting, May 5. 10 cts.

Estimates of Population in Water Supply Problems. Comparison of four methods of estimating future growth and distribution of water according to various public needs. 1,300 words. Canadian Engineer, May 20. 15 cts.

Standard Apparatus and Procedure Recommended for Sand Analysis. A change from sand grain size to sieve opening size will help the contractor to understand specifications. Elimination of phrases, "Effect of Size" and "Uniformity Coefficient" will simplify specifications. Paper by Philip Burgess and discussion by Allen Hazen. 4,000 words. Engineering Record, May 22. 10 cts.

Motor Vehicles in Water Works Service at Los Angeles, Cal. Water Works equipment is described, operating costs are given and some comparisons between horse and motor service are made. By Burt A. Heinly. 1,800 words. Engineering News, May 6. 15 cts.

Determination of Best Static Pressure in a Water Supply System. Discussion of service pressures and the determination of static pressures. Its effect on design and operation. 1,300 words. Canadian Engineer, May 13. 15 cts.

Water Supply and Typhoid Fever at Cumberland, Md. A filtered and chlorinated new water supply, a more efficient health department and a marked reduction in typhoid fever. By Arthur G. Fowler and Max J. Colton. 2 ills., 1,500 words. Engineering News, May 20. 15 cts.

Kensico Dam Construction in 1914. Record masonry laying; views of dam during work. By Wilson F. Smith. 5 ills., 2,000 words. Engineering News, May 20. 15 cts.

Modern Equipment on Water Pipe Trenching in Chicago Suburb. Describes equipment and force required. 2 ills., 1,000 words. The Contractor, May 15. 20 cts.

Ground Water Supplies. Sources; method of driving or sinking wells; analyses of ground waters; iron or manganese contents; cost of pumping machinery. By William S. Johnson. 5 ills., 8,500 words. Journal of Boston Society of Civil Engineers, May. 50 cts.

STREET LIGHTING AND POWER.

Lighting.

Ornamental Arc Lighting in Sioux Falls, S. D. An ornamental street lighting system with luminous arc lamps on single pole units replaced arc lamps at street intersections. Installation expense was borne by property owners and maintenance and upkeep by city. 9 ills., 1,200 words. Lighting Journal, May. 10 cts.

Chicago Street Lighting. Describes various types of lamps and lamp posts. From a paper by P. E. Haynes. 5 ills., 1,000 words. American Gas Light Journal, May 17. 10 cts.

A New Era in Street Illumination. Gives up-to-date practice in street illumination and describes new types of lamps suitable for use. By Ward Harrison, illuminating engineer. National Lamp Works. 12 ills., 22 pp. Journal of Cleveland Engineering Society, May. 35 cts.

Power and Lighting Plants.

Harrisburg, Ill., Railway and Power Plant. A 2,000 k. w. condensing turbine plant supplying current for an interurban line, for a number of mines and for lighting. A softener and purifier converts hard, muddy and corrosive water into excellent boiler feed at a cost of 1 cent per 1,000 gal. By Thomas Wilson. 7 ills., 3,000 words. Power, May 25. 5 cts.

Calgary Municipal Lighting Plant. Price of current may be reduced; types and cost of lamp used in street lighting. 600 words. Municipal Journal, May 27. 10 cts.

First Uniflow Plant on Pacific Coast. Description of plant capable of providing elevator and lighting service without flickering lights and also to take care of the large roof sign which is thrown on and off every thirty seconds. 4 ills., 1,200 words. Power, June 1. 5 cts.

New Austin Dam and Power Plant. Description of the new dam; plans; foundation; history of the old dam. By Frank S. Taylor, resident engineer. 2

ills., 3,000 words. Engineering and Contracting, May 26. 10 cts.

Hollow Reinforced Concrete Structure Replaces Dam at Austin, Texas, Which Failed Fifteen Years Ago. First of a series of articles. This reviews the history of the previous dam and describes work of rendering seamy rock impermeable; cut-off trench tested with drill holes and compressed air. 2 ills., 2,400 words. Engineering Record, May 29. 10 cts.

Water Power Investigations. Summary of report of the British Columbia Hydrographic survey giving the developed and undeveloped resources of Southern B. C. 4,500 words. Canadian Engineer, May 6. 15 cts.

New Austin Dam and Power Plant. Description of the dam, penstocks, power house and equipment and the methods of construction. New dam replaces one that failed about fifteen years ago. 5 ills., 3,000 words. Electrical Review, May 22. 10 cts.

Enlarging a Steam Reserve Station. Problems involved in rehabilitating the Consolidated Gas, Electric Light and Power Company's Station at Westport, Md. By J. C. Lothrop. 7 ills., 8,000 words. Electrical World, May 8. 10 cts.

Gas.

Chemical Control of Gas Manufacture. The seventh of a series of articles. This one treats of chemistry and chemical tests for purity. By W. M. Russell and Frank Wills. 2 ills., 1,000 words. Gas Age, May 15. 10 cts.

Cost and Method of House Heating by Gas. From a paper by F. R. Hutchinson before the Natural Gas Association. 15 ills., 5,000 words. Gas Age, June 1. 10 cts.

Chemical Control of Gas Manufacture. Eighth of a series of articles. This one discusses gas analysis. By W. M. Russell and Frank Wills. 3 ills., 5,000 words. Gas Age, June 1. 10 cts.

Miscellaneous.

Cost of Combination Electric Service. Investigation at Calgary to determine the best way of taking energy from a hydroelectric transmission system and city's steam station. 8 ills., 3,000 words. Electrical World, May 8. 10 cts.

Chimneys for Oil and Coal-Burning Plants. Discussion of conditions governing sizes of chimneys required for oil burning apparatus. By F. H. Rosenkrantz. 2,000 words. Power, May 11. 5 cts.

Steam-Generating Methods, Cleveland Municipal Plant. This plant uses economizers. Gates in the hopper outlet of the coal bunkers are opened and closed by compressed air. Delray-type boilers are used. By A. D. Williams. 2 ills., 2,200 words. Power, May 11. 5 cts.

FIRE.

Protection.

The Pottsville, Pa., Fire Department. Describes equipment in service, stations and fire alarm system with recommendations for improvements. From report by National Board of Fire Underwriters. 3,500 words. Fire and Water Engineering, May 26. 10 cts.

New Rochelle Fire Department. Report of the National Board of Fire Underwriters. 3,000 words. Fire and Water Engineering, May 19. 10 cts.

Prevention.

Fire Prevention. Causes of fire; incendiary; conditions in Europe; insurance. By G. Burgess Fisher. 1,850 words. Fireman's Herald, May 1. 5 cts.

Apparatus.

London's Motor Fire Apparatus. One hundred and four pieces in service in London, England; forty-three ordered; skidding causes trouble; description of auto vehicles. 2,000 words. Fireman's Herald, May 8. 5 cts.

Miscellaneous.

Cincinnati Builds High-Pressure Fire Service System. Pumping Station will use filtered supply instead of raw water from Ohio River; 20-inch main girdles district. By J. A. Hiller, general superintendent. 3 ills., 1,000 words. Engineering Record, May 8. 10 cts.

Fires and Fire Insurance. Gives fire losses for 1914. Summarizes fire prevention measures in several cities. By Dennis E. Carey, chief, Lawrence, Mass. 1,500 words. Fireman's Herald, May 22. 5 cts.

Fire Record of the Cities. Gives a loss by fire for 298 cities. Also gives comparative losses and loss per capita. 2 pp. Fireman's Herald, May 29. 5 cts.

Automobile Fire Stations. General plan of one-story building for small cities and suburbs; care required in gasoline storage. 1,100 words. Municipal Journal, May 13. 10 cts.

Trenton's New Engine House. Is designed for motor apparatus exclusively; elevator raises or lowers machines for repairs; description of equipment. 2 ills., 1,000 words. Municipal Journal, May 13. 10 cts.

Salaries and Time Off of Firemen in Cities in the United States and Canada. 4 pages of tables. Fire and Water Engineering, May 12. 10 cts.

STREET CLEANING AND REFUSE DISPOSAL.

Street Cleaning.

Records of Washington's Street Cleaning. Total and unit costs for street cleaning and waste collection and disposal; explanation of items. 1,500 words. Municipal Journal, May 13. 10 cts.

Work of the New York Department of Street Cleaning. Complete description of the department and its work since its organization in 1881. By Frederick L. Stearns. 26 ills., 22 pages. Publication of Municipal Engineers of the City of New York, October 1913. 50 cts.

Street Cleaning in Calgary. Duties, organization and equipment of department; electrically driven trucks and flushers are used; costs of operation and maintenance; bobsleds and gutter plows used in removing snow. By W. E. Hardenburg. 1 ill., 1,700 words. Municipal Journal, May 13. 10 cts.

Snow Removal.

Methods Introduced in New York Last Winter Cut Cost and Increased Speed of Snow Removal. Record shows saving of 75 per cent and quadrupled rate of cleaning when compared with averages over period of years. By J. T. Fetherston, commissioner of street cleaning. 3 ills., 2,000 words. Engineering Record, May 22. 10 cts.

Refuse Disposal.

Design and Operation of Small Municipal Refuse Incinerators at International Falls, Minn. 1 ill., 2,000 words. Engineering and Contracting, May 26. 10 cts.

Garbage Reduction in Cleveland. Figures relating to operating costs and results of garbage reduction plant. 600 words. Canadian Engineer, May 20. 15 cts.

GOVERNMENT AND FINANCE.

City Planning.

Some of the Larger Problems of Town Planning. Discusses strategic factor, traffic problem and division of traffic. By Thomas H. Mawson. 4,500 words. Surveyor, May 21. 40 cts.

How Cleveland Fixes Sizes of Courts and Yards. Description of scientific method of designing areaways for tenants. 2 ills., 800 words. Engineering Record, May 15. 10 cts.

Government.

Commission and City-Manager Cities. Gives list of the 371 short ballot cities. 1 page. Municipal Journal, May 20. 10 cts.

City Manager vs. Commission Government. Notes on advantages of commission government over the mayor and council system and on the further advantages of the city-manager plan. 2,000 words. Canadian Engineer, May 25. 15 cts.

Public Utilities.

Future Regulation of Public Utilities. Functions of regulation; public and private business; public ownership and public service economy; costs in Wisconsin; analysis of costs. By William D. Kerr. 14,000 words. Water and Gas Review, May. 20 cts.

Miscellaneous.

Municipal Trading. Legal Powers of cities to engage in plumbing, brick manufacture, quarrying and dealing in fuel, real estate and liquor. By J. Simpson. 3,600 words. Municipal Journal, May 27. 10 cts.

TRAFFIC AND TRANSPORTATION.

Jitneys.

Jitney Situation. Growth and wane of the little bus craze in various cities. By J. J. Johnson, assistant general manager Oklahoma Railway Company. 2,200 words. Public Service, June. 20 cts.

The Jitney Bus. Gives cost of operation. By C. I. Palm, superintendent Omaha and Council Bluffs Street Railway. 1,200 words. Engineering News, May 13. 15 cts.

Rapid Transit.

Design of Steel Elevated Railways, New York Rapid Transit System. Reasons for choice of arrangement and details of city-built lines; placing of columns; expansion joints; bracing; type of column; weight. By Maurice E. Griest. 10 ills., 4,800 words. Engineering News, May 20. 15 cts.

NEWS OF THE SOCIETIES

Calendar of Meetings.

June 14-16.
SOUTHWESTERN WATERWORKS ASSOCIATION.—Annual Convention, Galveston, Tex. Secretary, E. L. Fulkerson, Waco, Tex.

June 16-19.
TRI-STATE WATER AND LIGHT ASSOCIATION of the Carolinas and Georgia.—Annual Convention, Asheville, N. C. President, F. C. Wyse, Columbia, S. C. Convention Manager, W. F. Stieglitz, Columbia, S. C.

June 22.
MAYORS' ASSOCIATION OF CONNECTICUT.—Bridgeport, Conn.

June 22-25.
SOCIETY FOR THE PROMOTION OF ENGINEERING EDUCATION.—Annual Meeting, Iowa State College, Ames, Ia. Secretary, F. S. Bishop, Univ. of Pittsburgh, Pittsburgh, Pa.

June 22-26.
AMERICAN SOCIETY FOR TESTING MATERIALS.—Annual Meeting, Atlantic City, N. J. Secretary, Edgar Marburg, Univ. of Pennsylvania, Philadelphia, Pa.

June 25-July 1.
THE COUNTY COUNCILS ASSOCIATION (Great Britain).—National Road Conference and Exhibition, London, England. Business Manager, A. F. May, 13 Victoria Street, Westminster, S. W. London, England.

Aug. 2-6.
GOOD ROADS CONGRESS.—San Francisco, Cal., under the auspices of the Tri-State Good Road Association.

Aug. 4-5.
TEXAS GOOD ROADS ASSOCIATION AND COUNTY JUDGES' AND COMMISSIONERS' ASSOCIATION.—Midsummer meeting, Agricultural and Mechanical College of Texas, College Stat., Tex. Secretary, Texas Good Roads Assoc., D. E. Colp, San Antonio.

Aug. 31-Sept. 3.
INTERNATIONAL ASSOCIATION OF FIRE ENGINEERS.—Annual Convention, Cincinnati, O.

Sept. 13-19.
PAN-AMERICAN ROAD CONGRESS.—Held by American Road Builders' Association and the American Highway Association. Oakland, Cal.

Sept. 16-18.
AMERICAN ELECTROCHEMICAL SOCIETY.—Twenty-eighth annual general meeting, San Francisco. J. M. Muir, 239 West 39th street, New York City, Chairman of Transportation Committee.

September 20-25.
INTERNATIONAL ENGINEERING CONGRESS.—Am. Soc. C. E., Am. Inst. Min. E., Am. Soc. Mech. E., Am. Inst. E. E. and Soc. N. A. & M. E., San Francisco, Cal. Secretary, W. A. Catell, Foxcroft Building, San Francisco, Cal.

Sept. 22-24.
MASSACHUSETTS STATE FIREMEN'S ASSOCIATION.—Annual convention, Haverhill, Mass. George Wilson, Lynn, Mass., Chairman of Committee.

Oct. 11-15.
NATIONAL PAVING BRICK MANUFACTURERS' ASSOCIATION.—Annual Convention, Dayton, O. Secretary, Will P. Blair, B. of L. E. Bldg., Cleveland, O.

October 12-15.
AMERICAN SOCIETY OF MUNICIPAL IMPROVEMENTS.—Annual Convention, Dayton, O. Secretary, Charles Carroll Brown, 702 Wulsin Bldg., Indianapolis, Ind.

November 17-19.
NATIONAL MUNICIPAL LEAGUE.—Annual Convention, Dayton, O. Secretary, Clinton Rogers Woodruff, 705 North American Bldg., Philadelphia, Pa.

Dec. 27-Jan. 8, 1916.
SECOND PAN-AMERICAN SCIENTIFIC CONGRESS.—Washington, D. C., Department of State, Washington.

New York State Conference of Mayors.

The sixth annual conference of mayors and other officers of the cities of New York was held at the Hotel Rensselaer, Troy, N. Y., June 1-3. The business of the conference began with meetings of the advisory committee and the bureau council. In the afternoon the business sessions were formally opened at the hotel.

The bureau council, after some discussion and after hearing various city officials, decided that, as the municipalities as a whole needed a state bureau of municipal information and would benefit by it, each city should share

the burden of expense. Each first-class city was asked to contribute \$500; each second-class city \$300, and each third-class city \$150. This will give the conference a fund of \$10,000 if all cities contribute. It is expected this amount will be sufficient to finance the bureau and pay the ordinary running expenses of the conference. Pledges or appropriations have been received from nearly all the cities.

I. K. Breen, mayor of Watertown, presided over the first meeting Tuesday afternoon. Mayor C. F. Burns of Troy delivered the address of welcome, which was responded to by President R. M. Cox, mayor of Middletown, who spoke on "Efficiency First, the Slogan of the Conference." He stated the greatest present need of the cities of the state to be "efficiency, which includes both honesty and economy."

The next speaker, Deputy State Comptroller Fred G. Reusswig, in his discussion of the state comptroller's relations with municipalities, told the city officials that the comptroller is planning to install a uniform accounting system in city treasurers' offices as soon as possible.

"It is likely," he said, "that within the next year every city in the state, outside the first-class cities, will be required to conform its accounting records to this plan. At least, the main features of it will be preserved in a uniform system of accounting for third-class cities which it is the purpose of the state comptroller to prescribe."

He also announced a new plan to keep city officials informed of each new statute and each amendment to existing statutes. He said that the comptroller is arranging to send the city officials coming under his jurisdiction a statement of laws and amendments affecting their several offices which were enacted by the legislature last winter.

Herbert R. Sands, of the New York bureau of municipal research, read a paper prepared by Dr. Frederick A. Cleveland, director of the bureau, who was unable to be present.

The paper, the title of which was "What Efficient Budget Making Should Accomplish," pointed out that the budget should not relate solely to the future but should be the means of bringing to notice the results secured by past operations, particularly those of the preceding year. "First, a complete budget procedure for all departments should be drafted and the interest of all department heads secured therein. This draft of procedure should set forth clearly just what kinds of statements the budget should include and should specify dates, places, etc., second, a central authority should be designated for the granting of allotments. It is impossible to foresee at the beginning of the year all contingencies which will arise, and hence it is proposed to make appropriations for definite objects of expenditure, such

as supplies, salaries, materials, equipment, etc., and that from time to time during the year allotments of the annual appropriations shall be made to the several departments."

Reports of committees were then heard. The advisory committee stated in connection with the censorship of motion pictures that the conference was now a member of the national board of censors, and also submitted a draft of a model motion picture ordinance. The legislative committee reported that it had passed on all municipal legislation introduced to the legislature and had approved 13 and opposed 10 bills. The municipal welfare committee reported a continuance of the educational work in municipal welfare.

The nominating committee reported for the following officers, who were later elected: President, Rosslyn M. Cox, Middletown; vice-president, Edwin W. Fisk, Mt. Vernon; secretary, W. M. Capes, New York; treasurer, Joseph H. Stevens, Albany; bureau council: James Lennon, Yonkers; Frank Lybolt, Port Jervis; D. W. Wilbur, Poughkeepsie; Frank Nelson, Hornell, and C. W. Brister, Auburn. Syracuse was selected as the place for the 1916 meeting. Ogdensburg, Jamestown and Glens Falls also extended invitations for the 1916 conference.

Addresses at the evening session included those by former Mayor Mann of Troy and by Arthur L. Andrews. The latter, speaking on "The Home Rule Amendment," described in detail each provision of the amendment. Reports and messages from the governors of Michigan, Arizona, Ohio and Nebraska were read.

The Wednesday morning session was spent in listening to reports from mayors of various cities on the most important municipal accomplishments during the year. Most of the mayors responded in five-minute talks.

Immediately after lunch the conference visited the new high school showing the Gary, Ind., system, and later held the afternoon session at the schoolhouse. In this session, the mayor, or city official designated to represent him, spoke for five minutes on the important problems confronting their cities. The advisory committee was also organized, with Mayor Burns of Troy, chairman, and Mayors Breen, Watertown; Will, Syracuse, and Carlson, Jamestown.

Mayor D. W. Wilbur of Poughkeepsie presided at the evening meeting held at the court house. An interesting feature was a moving picture display of school industries at Gary, Indiana.

The first speaker at this session was Dr. Herman M. Biggs, state commissioner of health, whose topic was "The Health Survey of the cities of New York State." He gave statistics of death rates and recommended a thorough reorganization, urging that a full time health officer with proper assistants be provided. He urged the control of housing, etc., and the supervision of milk, water, and food, and stated some of the advantages of a health

department clinic and dispensary. He also advocated a thorough investigation of the typhoid situation. Finally, showing the advantages of preventive health work, he said: "Too much emphasis cannot be placed on the fact that preventive health work, efficiently and intelligently directed, saves at least ten times what it costs."

Harry Olsen, chief judge of the municipal court of Chicago, speaking on "What Is the Limit of Social Service Work Done by a Municipality?", described the procedure in Chicago in the treatment of defectives and feeble-minded, and told of his studies in these classes. He was followed by William A. Prendergast, comptroller of the city of New York, who spoke on "Municipal Finances." Mr. Prendergast, after discussing expenditures of cities and the increase in public debts, advocated the use of short term bonds, giving the following reasons for this:

"First, they cast upon those who are demanding the improvements the financial burden imposed by the improvements; second, they avoid heavy interest charges continuing through a long term of years; third, and most important, they bring the taxpayer face to face with the fact that he is incurring heavy expenditures and that if he wants the improvement he must meet the obligation."

Secretary Capes was elected director of the bureau council at a meeting held Wednesday. Just after the morning meeting the members of the conference and their guests were taken in automobiles for a tour of the city.

At the business session Thursday morning the following committees were named:

On Unemployed—Mayors Schoolcraft, Schenectady; Schermerhorn, Gloversville; Hoffman, Elmira; Midlani, Rome; Wortman, Hudson.

Codification of Municipal Laws and Ordinances—Mayors Canfield, Kingston; Hennessey, Oswego; Calkins, Cohoes; Davis, Cortland; Burkhart, Batavia.

Municipal Accounts—Comptroller E. S. Osborne, Rochester; Comptroller William H. Dennin, Troy; Duncan MacInnes, New York; Mayor Griffen, New Rochelle; Henry Neff, Salamanca.

Taxation—Lawson Purdy, president department of taxation, New York City; Mayors Shall, Little Falls, and Griffing, Glens Falls.

Advisory Committee, City Planning and Experts—Arnold W. Brunner, New York City; C. D. Lay, New York; Daniel L. Turner, New York; City Engineer Frank R. Lanagan, Albany.

Health—Dr. Herman C. Biggs, Albany; Dr. C. C. Duryea, Schenectady; Dr. J. S. Wilson, Poughkeepsie; Dr. George Goler, Rochester; Dr. F. E. Fox, Fulton.

Home Rule and Constitutional Amendment—A. L. Andrews, Albany; Mayor Mitchel, New York City; Mayors Corwin, Newburgh; Burns, Troy; Carlson, Jamestown; Cline, Amsterdam; Weidner, Lackawanna; Frank, Ogdensburg; Tree, Ithaca; Lattin, Corning.

Mayor J. Teller Schoolcraft of Schenectady presided over this meeting, which was the last session of the convention. Arnold W. Brunner, chairman of the conference's advisory committee of city planning experts, spoke on "City Planning in New York State Cities." In his part of the report presented by the committee of experts appointed to make a survey of the cities of the state, Mr. Brunner said that only five cities have appointed city planning commissions and that only four others intend to do so. He said the reason given by the other cities for not appointing a commission were vague and indicated an unsatisfactory condition.

Nelson P. Lewis, chief engineer of the board of estimate and apportionment of New York City, was the next speaker. His subject was "City Streets and How to Pay for Them." He advocated conservatism in the methods of financing street improvements. His conclusions were that in view of the enormous demands now being made upon the resources of the cities for purposes which are of general benefit, it is necessary either to create new sources of revenue or to raise at least a portion of the cost of improvements by direct assessment on the property benefited.

Other speakers were Charles Downing Lay, former landscape architect of New York City, who spoke on "Park and Playground Facilities," and Daniel L. Turner, deputy engineer, New York public service commission, who treated "Public Utilities and the City Plan."

After the last paper, the conference and the guests took a trip down the river on a boat provided by the city and enjoyed a clambake before returning to the city.

American Highway Association.

Col. Charles P. Light, field secretary of the American Highway Association, has been loaned by the directors of that organization to the Pan-American Road Congress until the close of the big meeting which is to be held in Oakland, California, during the week of September 13. It is expected that the congress, which is held under the auspices of the two leading road organizations of America, the American Highway Association and the American Road Builders' Association, will bring together representatives of the organized road movement throughout the entire United States and that it will have a large official representation from Canada and the Central and South American countries.

In lending Col. Light to the congress the American Highway Association is contributing largely to the success of the meeting, as it is generally conceded that no man in the road movement today is more widely known and more generally liked than he. His work will be largely concerned with the subcommittee on finance, of which James H. MacDonald, formerly state highway commissioner of Connecticut, is chairman. It is expected that Col. Light

will also confer with city and county officials, commercial and road organizations and others interested in the road movement, for the purpose of making known the character and scope of the annual road congress and to urge that strong delegations be named.

During Col. Light's absence, the association will continue its important projects, among which is the co-operation with the Bureau of Municipal Research and the Federal Office of Public Roads in legislative compilation and analysis. A new project which holds great possibilities as an educational medium will involve the preparation of a series of educational papers dealing with road building, maintenance and management and the publication of such papers locally to co-operate with county papers. It is expected that this series of papers will deal in an elementary, yet fundamental, manner and will aid powerfully in making known in local communities the proper methods of road building, maintenance and management. During 1915 it is estimated by the American Highway Association that nearly \$200,000,000 will be spent locally for the building and maintenance of roads. The time has come, therefore, for the greatest care to be exercised in the expenditure of local road funds rather than in urging increased expenditures.

New York County Highway Superintendents' Convention.

A special committee of highway supervisors is arranging for a convention of county highway superintendents to be held at the International Hotel, Niagara Falls, N. Y., June 23 and 24. It is expected that there will be an attendance of at least a thousand interested in good roads. As yet the program has not been arranged.

National Association of Manufacturers.

The National Association of Manufacturers met at their twentieth annual convention at the Waldorf-Astoria, New York City, May 25 and 26. Among the speakers were William H. Taft, former president, Senator W. G. Harding of Ohio, Dr. Eugene L. Fisk, M. W. Alexander, of the General Electric Company, and Arthur D. Little. There was a general discussion from the floor on all topics, and reports were read on Fire and Accident Prevention, Union Label, Immigration, Uniform State Laws, Trademarks and Copyrights, and Industrial Betterment.

Incidental to the convention was a unique exhibition devoted to various phases of Industrial Education, with students actually at work in various lines of industry. In this were included exhibits from New York City, Newark, N. J., Fitchburg, Mass., New Haven, Conn., Altoona, Pa., Detroit, Michigan, and other places where well-known trade schools are established. Sections were devoted to branches of industry upon which students from different schools were actually engaged in work.

BOOK REVIEWS

OUT OF WORK.—A Study of Unemployment. By Frances A. Kellor. G. P. Putnam's Sons, New York. 559 pp. Price, \$1.50 net.

It is only when unemployment became a "municipal problem" that a study of it began to be made, and its causes and effects analyzed and remedies suggested. But not until unemployment is recognized as not a municipal problem will any amelioration be achieved. The causes of unemployment are not local and are beyond local power to eliminate. That is why practically nothing had been accomplished since the first issue of this book in 1904, and that is why the situation throughout the country in the winter of 1914-1915 became so acute.

Hitherto municipal officials have developed only three solutions to this urgent problem: "running the hoboes out of the town," which is very common and typical; "rushing public works for the unemployed," and "public employment bureaus." The last two methods represent the utmost the most progressive cities have done. Commissions and committees have not gone beyond these in practice. Some cities have done fairly effective work with their bureaus but the immediate effects are illusory and the percentage of unemployed will not be decreased next winter.

Miss Kellor has studied the labor market in America at first hand and from every aspect and her suggestions for improvement are not only immediately practicable but designed also for

permanent relief. She recommends the establishment of a system of federal employment bureaus, regulation of agencies, the co-operation of civic forces, state laws, public work planning, regularization of industry, vocational education and unemployment insurance. Her program should be studied immediately and put into operation as soon as possible by local officials—before the winter brings its headlines of riots and suffering and "city officials helpless."

EUROPEAN POLICE SYSTEMS.—

By Raymond B. Fosdick. (The Bureau of Social Hygiene.) Century Co., New York. Price, \$1.30 net.

While "cleaning up the police department" is a favorite activity of reform administrations in this country, the police forces of some European cities are always being held up as examples of efficiency, scientific methods, thoroughness, organization and integrity. The foreign police department is not graft-corrupted; crime is detected, and criminals punished by scientific methods of anthropometry, dactyloscopy and the criminal laboratory; and the law is administered more effectively. Mr. Fosdick investigated the police systems of the chief cities of England, Scotland, France, Germany, Austria-Hungary, Italy, Holland and Belgium and found that, while methods of organization and work vary widely in the different cities and countries, on the whole, European police systems have points to offer to those of this country.

The method of the volume is divided

according to the general divisions of a police force: The commissioner, the assistant commissioners and their deputies, the uniformed force and the detective force. In each case powers, functions, character, promotion, training and methods of work are described and compared for the different cities investigated. The first chapter deals with general considerations of the purpose and tasks of the police in each city and country and how these are affected by national traits, economic, criminal and local considerations. The relation of the police department to the state which in most cases controls it, and questions of autonomy and interdependence are discussed in the second chapter. Exposition of the organization of police departments is detailed and, in the case of London, Berlin, Vienna and Paris, illustrated by valuable charts. "Methods of Crime Detection" is the subject of an interesting chapter dealing with the various applications of ingenuity, system, laboratory science and criminology to practical crime control. Perhaps the most inspiring chapter of the book to the American official, the last, deals with "The Integrity of the European Police" and how this is achieved by training of men and superiors, prohibitions, mechanical methods, and general honesty. A study of Mr. Fosdick's investigations should be a necessary prelude to any "cleaning up" if there is to be a definite, permanent, efficient and growing improvement in police systems in those cities of this country where it is needed, instead of the common "party shake-up."

MUNICIPAL INDEX

(Continued from page 818.)

Miscellaneous.

Heavy Traffic Problems in London. Discussion of Institution of Municipal and County Engineers. 2,500 words. Surveyor, May 7. 40 cts.

BRIDGES.**Bridges.**

Overhead Bridge at Moose Jaw. Steel traffic bridge consists of two pin-connected through spans with timber approaches. 2 ills., 1,200 words. Canadian Engineer, May 20. 15 cts.

Cabrillo Bridge at San Diego Exposition. Ornamental concrete structure, in appearance a series of arches, in reality cantilevers extending out from piers. 4 ills., 900 words. Engineering News, May 13. 15 cts.

Design and Construction.

Highway Arch Bridge at St. Johns, N. B. Notes on the design and construction of an interesting type of bridge now under erection. 5 ills., 1,000 words. Canadian Engineer, May 13. 15 cts.

Highway Bridge Approach Details. Suggestions as to design illustrated from practice. Narrower approaches, paved and sodded slopes, open approach spans and sloped arch barrels recommended. By Frank Barber. 8 ills., 1,800 words. Engineering News, May 20. 15 cts.

MISCELLANEOUS.**Concrete.**

Economics of Concrete Construction. Considers selection of stone, sand and cement, proper machinery, hand and machine mixing, placing and finishing, constructing forms, reinforcing, proper proportions, cost as affected by the character of labor, locality, etc. By DeWitt V. Moore. 6,500 words. Contract Record, May 19. 15 cts.

Materials.

Effect of Fineness of Sand and of Clay and Loam on the Strength of

Mortar. By F. L. Roman, testing engineer, Illinois Highway Commission. 10 ills., Engineering and Contracting, May 5. 10 cts. 2,000 words.

How Stone is Quarried for Roads at Winchester, Mass. Describes methods used and gives suggestions as to operating such a quarry. By Daniel J. Hauer. 2,500 words. The Contractor, May 1. 20 cts.

Wearing Tests for Sand and Gravel. Description of tests of apparatus required for each; results of tests. By F. L. Roman. 3,500 words. Good Roads, May 1. 10 cts.

Corrosion of Iron and Steel. Recounts various theories of corrosion and discusses the effect of alkalies and acids. Protective measures considered. By W. J. E. Binnie. 9,000 words. Surveyor, April 23. 40 cts.

Manufacture and Use of Pure Iron. By Howard See. 3 ills., 4,000 words. Journal of the Association of Engineering Societies, April. 30 cts.

Deterioration and Decay in Timber. How rotting wood has endangered various forms of construction in Canadian practice; an interesting discussion at Montreal. 4 ills., 4,000 words. Contract Record, May 5. 15 cts.

Construction.

Some Fundamental Principles of Scientific Shoveling. A discussion of the length of shovel handles and shape of blade for different kinds of work. The first of a series of articles dealing with every phase of handling materials with shovels. By Daniel J. Hauer. 3,000 words. The Contractor, June 1. 20 cts.

Scientific Methods of Management and the Application of Construction Work. Planning and routing; form design; bonus system and task work. 8 ills., 5,000 words. Engineering and Contracting, May 12. 10 cts.

Scientific Management in Planning Construction Jobs. The second in a series of articles dealing with management in handling contract work, showing how profits are made. This article takes up in detail the division and character of planning the work. By Daniel J. Hauer. 3,500 words. The Contractor, May 15. 20 cts.

Methods of Using Explosives in Open Excavation Work. An article abstracted from Bulletin No. 80 of the Bureau of Mines. By C. E. Munroe and Clarence Hall. 3 ills., 3,500 words. The Contractor, June 1. 20 cts.

How to Keep Records of Tools and Machinery. The second of two articles telling how such records should be handled. 2,500 words. The Contractor, May 15. 20 cts.

Miscellaneous.

Multiple-Arch Diversion Dam at Three Miles Falls, Oregon. Long low multiple-arch reinforced concrete dam constructed by U. S. Reclamation Service. By H. D. Newell. 4 ills., 1,800 words. Engineering News, May 27. 15 cts.

New York City's Public Baths. Location, class of patrons and number of appliances; high average daily use of appliances. 1,000 words. Municipal Journal, May 20. 10 cts.

Regulation of Roller Skating on Streets and Sidewalks. Abstract of regulations in twelve cities. By Andrew Linn Bostwick. 700 words. Municipal Journal, May 13. 10 cts.

Initial and Operating Costs of Refrigeration Plants. By Robert P. Kehoe. 3,000 words. Power, May 25. 5 cts.

Making Ice with Purchased Electricity. Possibilities of manufacturing ice by electric power secured from stations at times of light load. By C. A. Tripp. 3 ills., 3,000 words. Municipal Engineering, May 25 cts.

Progress in Municipal Ownership and Operation of Ice Plants. Describes plants now in operation and their methods of doing business. By Jeanie Wells Wentworth. 5 ills., 2,400 words. American City, May. 25 cts.

Chicago's Municipal Repair Shop. All repair work has been concentrated in a single shop in which each department has a part. By C. C. Saner. 4 ills., 1,500 words. Municipal Engineering, May. 25 cts.

Park Engineering. Engineering features involved in construction and design; organization of department; drainage; grading; paths; requirements for site. 3,000 words. Municipal Journal, May 13. 10 cts.

NEW APPLIANCES

Describing New Machinery, Apparatus, Materials and Methods and Recent Interesting Installations.

FIRE LOCATION.

A New Device for Quicker Work in Locating Fires.

A new device for the rapid location of fires has been invented by Fire Chief H. R. Yates, of Schenectady, N. Y. The simple, convenient device of Chief Yates is an adjustable running card operated on the principle of the ledger. It consists of as many metal frames as the department may require, each having a metal index tab and holding two cards measuring 18 by 20 inches. On these are printed the location of the different fire alarm boxes and by means of the tabs the location of the fire can be determined exactly. Not only is the device claimed to be a space-saver, but also a fire-loss saver. The now commonly-used system is the large wall card, which is expensive to print and which takes much valuable time to read.

The system, which is here shown in the illustration, is made by the Bland Adjustable Display Frame Co., 110-120 South Church street, Schenectady, N. Y.

STALEY POWER TRACTOR TAMPER.

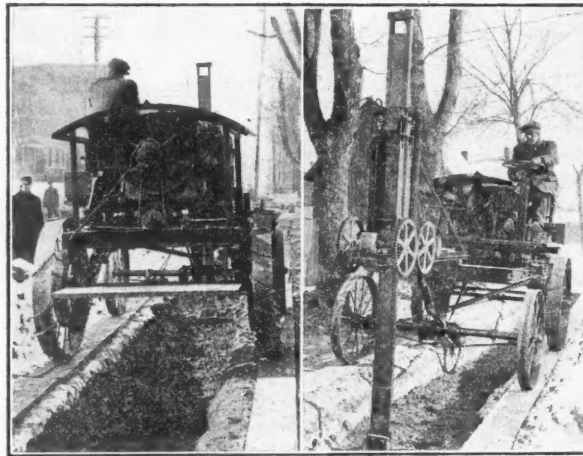
A new development in the field of tamping is the invention of R. H. Staley. This machine is a power tamper operated entirely by gasoline. It has been tested out by the Springfield (Ill.) Gas & Electric Co. and found very effective in tamping the refill of trenches.

This traction type machine, No. 5, has a speed of 10 to 20 feet per minute while tamping and 4 miles per hour on the road. It delivers 80 blows per minute each equivalent to about 300 to 400 pounds falling through 2 feet. The transverse range of the tamping head is 7 feet while the vertical range is from 18 inches above the surface to 8 feet below. The transverse travel of the sweep is by power.

The engine is of the twin opposed cylinder type, 8-horsepower, magneto

ignition, and has a forced feed lubricator. The weight of the machine is about 5,000 pounds. It has a 6-foot tread.

The accompanying illustration shows the rear and front views of the machine. The Lourie Mfg. Co., Springfield, Ill., makes the Staley tamper.



STALEY TAMPER AT WORK.

CASE CARS.

For Fire Service.

The Case car is adapted for fire use in many capacities—as chief's car, service or supply car, fire alarm car, as a chemical or hose wagon, or as a squad wagon. The standard car is five-passenger size.

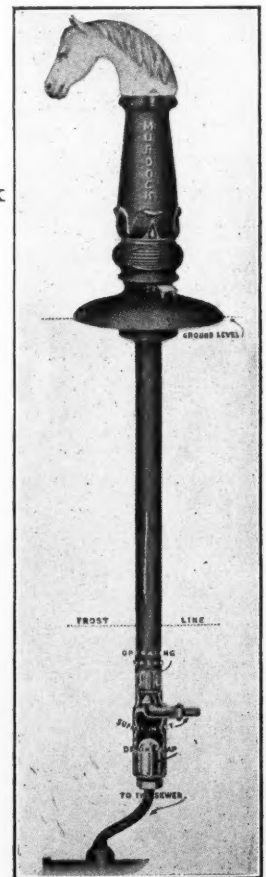
The power plant is unit construction, with the transmission bolted rigidly to the motor. The motor is a Case T-head, four-cylinder, with an actual B. H. P. 35 and S. A. E. rating 22½. The crank shaft, connecting rods and cam shafts are of special forged and heat-treated steels. The carburetor is Stomberg, dash-control, and the ignition Westinghouse, high-tension—separate unit—automatic spark control. The starting and lighting is by Westinghouse six-volt system. The lubri-

cation is by splash system, constant level being maintained by positive-driven plunger pump. The clutch is multiple-disc and the transmission sliding selective, three speeds forward and one reverse. Timken bearings are used throughout and a Spicer universal joint takes the final drive.

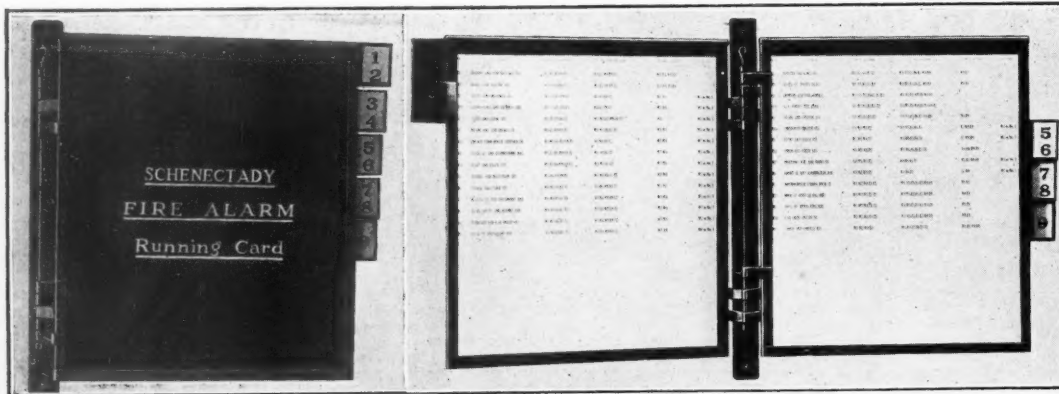
The frame is of the single drop type, of special pressed steel, with channel sections. The axles are Weston-Mott in rear and I-beam section with Timken bearings in front. The brakes are external contracting, internal expanding, and the springs are long, easy riding, floating cantilever. The drive is left hand, center control. The wheelbase is 115½ inches. The tires are Goodyear, non-skid on rear.

The accompanying illustration shows a Case car in use in the fire department of the Case plant. It is made by the J. I.

Case Threshing Machine Co., Racine, Wis.



MURDOCK HORSE-FONT.



THE YATES FIRE-LOCATING CARD.

DRINKING FOUNTAINS.**Non-Freezing "Bubble-Font" and "Horse-Font."**

The use of bubble-fountains has been recognized as the safest method of supplying water for people. The common trough is still widely used for horses. The Murdock "Horse-Font" is claimed to be sanitary, non-freezing, always cool and easily operated. The Murdock "Bubble-Font" has the same claims for it. The fountains differ only in the tops. Both have the operating valve, supply inlet, drain-trap and outlet below the frost line, as shown in the illustration. The standpipe of the fountain is instantly drained into the sewer so that the next draught is fresh from the main. The mechanism is operated by foot-pedal. In the case of the horse-font a bucket is hung on the ears of the horse-top, for convenience, and the foot-pedal operated. The "bubble-font" has the type of top usual to this type of fountain. The water cannot be tampered with and the fountain remains sanitary.

The Murdock anti-freezing devices are furnished in various lengths or depths of bury. These vary from 2 feet to 6 feet. They are made by the Murdock Mfg. & Supply Co., 426-430 Plum street, Cincinnati, O.

INDUSTRIAL NEWS

Cast Iron Pipe.—Chicago—The award of 2,265 tons of 16 and 24-inch pipe at Chicago was made to the American Cast Iron Pipe Company, at \$22.85. This was the only letting of importance closed. At Milwaukee 300 tons are wanted, and at Kenosha, Wis., 2,500 tons. Quotations: 4-inch, \$25.50; 6 to 12-inch, \$23.50; 16-inch and up, \$23. Birmingham—Foundries continue active on contracts already awarded. Little new business came in. Quotations: 4-inch, \$21; 6-inch and up, \$18. San Francisco—Palo Alto, Cal., has placed a contract with the United States Cast Iron Pipe & Foundry Company for about 250 tons, and the same company has a small order from Phoenix, Ariz. Imperial, Cal., has placed an order for 17,372 feet of 4-inch pipe with Paine, Bailey & Co., San Francisco. Pasadena, Cal., has received bids for 1,200 feet of 8-inch, 1,200 feet of 14-inch and 2,100 feet of 4-inch pipe. New York—Municipal lettings are slow, no business of this character being in prospect. Prices steadily strengthening. Quotations: Class B and heavier, \$22 to \$22.50; Class A, \$23 to \$23.50.

Lead.—Quotations: New York, \$4.90; St. Louis, \$4.825.

Portland Cement Production.—According to advance statistics issued by the United States Geological Survey, the total production of Portland cement in 1914 was 88,230,170 barrels, as compared with 92,097,131 barrels in 1913, or a decrease of 4.2 per cent. Shipments amounted to 88,437,956 barrels, against 88,689,377 barrels in 1913, a decrease of 2.5 per cent. Stock on hand at the end of the year totaled

12,893,863 barrels, an increase of 14.9 per cent over the stock on hand at the end of 1913. The average factory price per barrel for 1914 was \$0.927, a decrease of 7.7 per cent from \$1.005, the average price of 1913.

PERSONALS

Bowman, Austin Lord, chief engineer of the department of bridges of New York City, and one of the foremost bridge builders and engineers in this country, died June 3. As a mark of respect to his memory, his associates in the bridge department had the flags on every bridge in the city lowered to half mast during the services. Mr. Bowman was born in Manchester, N. H., on November 14, 1861. He studied engineering at Yale, graduating with the degree of A.B. in 1883, and immediately engaged in his professional work. He has been engaged in engineering work continuously since then; specializing in design and heavy construction, both in railroad and bridge work. After a few years of municipal and railway engineering work in the west, he came east in 1887 and engaged in the construction of the Kings County Elevated Railroad in Brooklyn. From 1887 to 1890 he was a member of the engineering force of the Norfolk & Western Railway and for the next five years he was engineer and superintendent of construction for the American Bridge & Iron Company at Roanoke, Va. After a year in the service of the national government, Mr. Bowman came to New York and established himself as a consulting engineer. The Central Railroad of New Jersey retained him as consulting engineer to reconstruct most of the important bridges on its roads, and he was engaged at this task for six years. In 1907 he entered the service of the city as consulting engineer of the bridge department and in a few years he was made chief engineer of the department, the position he held at his death. Mr. Bowman was a Phi Beta Kappa man,

a director of the American Association of Engineers, the New York Railroad Club, the Yale Club and a member of a number of engineering societies.

Tuska, Gustave R., M.Am.Soc.C.E., M.Am.Soc.M.E., consulting engineer, New York City, has been appointed lecturer in "Municipal Waste Disposal" at Columbia University, New York, and will deliver a course of lectures on this subject during the coming year. Mr. Tuska has for some years been acting as consulting engineer to various garbage, refuse and waste disposal plants, both in this country and abroad.

The following have been elected in Illinois:

Glen Carbon—Hirman Slinger, Jr., president of the board of trustees.

Worden.—Charles J. Moulin, president; trustees, Wm. Schlietsick, Edmond Olive, Herman Behme.

Venice.—John Selb, mayor; city clerk, Noah Ratcliff, city attorney, Wm. J. Baxter; aldermen, first ward, Walter Quillman; second ward, C. J. Noeth; third ward, Chas. Adams; to fill vacancy, John C. Hamby.

Farmington.—Mayor, C. A. Smith, city clerk, G. C. Hubbard; city treasurer, Sarah Routson; city attorney, A. A. Luckey; aldermen, first ward, C. A. Negley; second ward, G. P. Durell; third ward, Robert Reader.

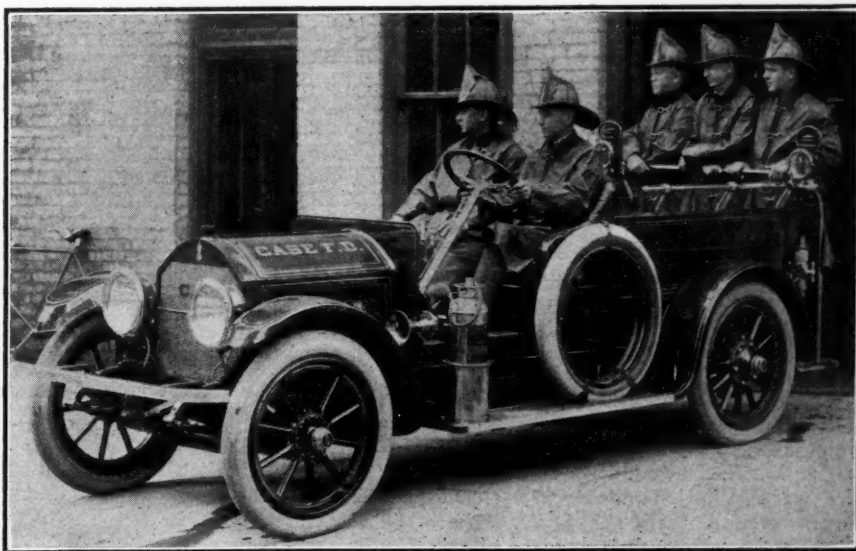
Pecatonica.—Village president, J. S. Tarbert; village trustees, H. S. Barloga, W. R. Stone, Frank Lundquist.

Oregon.—Dr. H. E. Wade, re-elected mayor.

Pearl City.—President, A. L. Hurd; trustees, F. C. Meyers, Roy Wise, John Shoff; police magistrate, J. J. Crouse.

German Valley.—President, Lewis Foscha; clerk, G. R. Rummel; trustees, John J. Cordes, John Baal, Jacob J. Cordes.

Waukegan.—W. W. Pearce, mayor; E. V. Orvis, J. J. Dietmeyer, J. L. Swayer and G. N. Powell, commissioners.



CASE FIRE DEPARTMENT CAR.

North Chicago.—L. B. Jolley, mayor; Bohus Rause, clerk.

Barrington.—President, A. W. Meyer; village trustees, A. W. Sutherland, George J. Hager, George T. Stieffenhoefer.

Grayslake.—President, Fred Battershall; trustees, Wm. Brandstetter, O. Richardson, E. V. Harvey.

Antioch.—President, W. S. Rinear; treasurer, J. Ernest Brook; clerk, to fill vacancy, Harry A. Isaacs; trustees, C. A. Powles, W. E. Volkman, J. H. McVey.

The following have been elected in North Carolina:

Asheville.—Mayor and commissioners of finance, J. E. Rankin; commissioner of public safety, D. Hiden Ramsey; commissioner of public works, James G. Stikeleather.

Statesville.—L. C. Caldwell, third term as mayor; W. J. Matheson, D. M. Ausley, T. N. McElwee and J. G. Shelton, re-elected aldermen, and W. A. Evans, H. O. Steele and N. D. Tomlin, new members.

Hendersonville.—Mayor, C. E. Brooks; commissioners, K. G. Morris, Brownlow Jackson, R. C. Clarke, Republicans; J. W. Bailey, M. M. Sheperd, John S. Forrest.

Graham.—Heeman Hughes, mayor; commissioners, R. I. Holmes, R. B. Tate, J. D. Long, R. H. Farrell and Don E. Scott.

Greensboro.—Mayor, Thomas J. Murphy; R. M. Rees, commissioner of public safety; J. Giles Foushee, commissioner of public works; S. Glen Brown, Judge of municipal court.

Wilmington.—Mayor, Parker Quince Moore; councilmen, first ward, W. F. Jones; second ward, Louis M. Bunting, third ward, B. A. Merritt; fourth ward, James M. Hall; fifth ward, W. J. Bradshaw; sixth ward, W. D. McCaig.

Elkin.—Mayor, C. G. Armfield; commissioners, G. T. Roth, Dr. E. G. Click, J. S. Atkinson, C. W. Bodenheimer and A. W. George.

Warsaw.—Capt. S. A. Johnson, mayor; D. W. Hobbs, L. P. Best, C. B. Best, G. P. Pridgen and B. C. Sheffield, commissioners.

Albermarle.—M. J. Harris, mayor; A. C. Heath, A. F. Biles, J. A. Groves, W. H. Snuggs and J. D. Lowder, aldermen.

Granite Falls.—D. M. Cline, re-elected mayor; commissioners, A. M. Martin, A. D. Abernethy, L. T. Sharp.

Sanford.—Mayor, E. L. Howard; aldermen, first ward, E. M. Underwood and C. G. Hatch; second ward, L. M. Spivey, W. M. Kelly; third ward, Rev. G. R. Underwood, J. C. Gregson; fourth ward, J. F. Makepeace, W. R. McAuley.

Durham.—B. S. Skinner, mayor; L. S. Christian, police and fire commissioner for six years; aldermen, N. B. Green and John T. Christian; fourth ward; M. R. Newsom, W. T. Cole, third ward; W. C. Bradsher and J. D. Hardin, second ward, and J. W. Pope and I. G. Lawrence, first ward.

Highland.—William S. Stanley, mayor; Robert S. Aldred, Olas L.

Eckard, Dexter C. Hoke and Landen G. Bowman, aldermen.

Statesville.—L. C. Caldwell, mayor; aldermen are N. D. Tomlin, Thomas McElwee, J. G. Shelton, D. M. Ausley, M. P. Alexander, L. B. Bristol, Oscar Steele, W. A. Evans, W. J. Matheson, J. F. Carlton.

Kings Mountain.—A. G. Cline, re-elected mayor; W. P. Fulton, W. K. White, G. V. Patterson, G. T. King, and L. Plonk, commissioners.

Clinton.—H. L. Stewart, mayor; J. C. Weeks, A. H. Herring, H. A. James and H. D. Smith, commissioners.

Smithfield.—L. H. Allred, mayor; commissioners, Dr. N. T. Holland, H. P. Stevens, N. B. Grantham and J. D. Underwood; re-elected, Capt. H. L. Skinner, S. C. Turnage and J. W. Stephenson.

Lilesville.—T. G. Wall, J. E. Kerr and Ben R. Wall, commissioners; A. J. Allen, mayor.

Hamlett.—H. D. Hatch, mayor; commissioners, E. N. Rhodes, Dr. H. F. Kinsman, W. N. Cosby, G. B. Lewis and J. F. Shelton.

Newton.—George A. Warlick, mayor; R. B. Caldwell, E. D. Gamble and S. D. Houk, aldermen.

Following have been elected in Kansas:

Dodge City.—W. T. Hale, mayor.

Spearville.—E. W. Moore, mayor; P. J. Upp, police judge; councilmen, Geo. F. Ravemkamp, H. A. Davis, Fred Weidower, Will Pine and P. T. Westmacott.

Cimarron.—J. A. Evans, mayor; Philip Miller, police judge; councilmen, J. R. Fisher, T. C. Egbert, W. R. Kelley, J. E. Mackey and Charles Herron.

Bucklin.—H. P. McCaustland, mayor; J. W. Gosslee, police judge; S. D. Aulls, Theo. Davis, J. A. Knight, W. T. Griffith and L. G. Van Voorhees, councilmen.

Ford.—C. G. Nevins, mayor; councilmen, C. E. Stewart, F. M. Coffman, John Emrie, G. B. Smith and V. C. Robb.

Liberal.—John Nusz, mayor; T. G. Hubbard, police judge; councilmen, A. E. Blake, C. D. Gasaway, F. G. Boles, C. H. Leete and C. W. Edison.

Ellinwood.—Mayor, G. O. Speirs, re-elected; councilmen, Ed. Isern, John Ludwig, John Dick, Frank Stivers and Milton Bosse.

Pawnee Rock.—Mayor, W. C. Lamb; councilmen, C. M. Brice, A. Lyle, A. S. Grose and E. J. Bowman.

Strong City.—D. L. Hilton, mayor; J. M. Clay, police judge, and M. A. Houghton, F. H. Willey, Dr. H. E. Lancaster, J. S. Miller, Charles Myers, councilmen.

United States Civil Service Examination.

Electrical Engineer and Draftsman (Male).

June 23-24, 1915.

The United States Civil Service Commission announces an open competitive examination for electrical engineer and draftsman, for men only,

on June 2 and 24, 1915. From the register of eligibles resulting from this examination certification will be made to fill vacancies as they may occur in this position at \$1,200 a year, in the office of the Supervising Architect, Treasury Department, Washington, D. C., and in positions requiring similar qualifications. Competitors will be examined in the following subjects, which will have the relative weights indicated:

Subjects.	Weights.
1. Theoretical and practical questions electrical science (covering the subject with special reference to lighting and elevator work in public buildings)	25
2. Drawing and design (involving ability to design and draw plans, etc., for all apparatus and machinery connected with electrical work in public buildings)	40
3. Training and experience	35
Total	100

Applicants must have the equivalent of a high school education and not less than three years' special experience as a draftsman principally in connection with electrical work and illuminating engineering, or be technical graduates with not less than six months' experience as electrical draftsman or practical experience in the installation of electrical wiring or apparatus. A rating of at least 70 per cent in this subject is a prerequisite for consideration for this position. Persons who meet the requirements and desire this examination should at once apply for Form 1312, stating the title of the examination for which the form is desired, to the United States Civil Service Commission, Washington, D. C.

State of New York—The Civil Service Commission.

Examinations for the State, County, and Village Service—June 26, 1915.

Open competitive examinations for the state service will be held in various cities throughout the state June 26, 1915, for the positions mentioned below. Intending competitors must execute application blanks and file them in the office of the commission on or before June 18, 1915. For application blanks address State Civil Service Commission, Albany, N. Y.

139. Junior Assistant, Engineering Departments; \$901 to \$1,200; minimum age, 20 years. Subjects of examination and relative weights: Problems in applied mechanics and mathematics, including surveying, elementary structures and hydraulics; questions on surveying and construction practice, and on materials of construction, 3; experience, education and personal qualifications, 2. Open to non-residents.

143. Landscape Draftsman, Bronx Parkway Commission, \$1,500 to \$1,800. Subjects of examination and relative weights: Questions relating to the duties of the position, 6; experience, 4. No sample questions. The commission requires a man with initiative and some experience in landscape design, a knowledge of horticulture, and with construction experience so that after assisting with the preparation of plans he can go into the field and superintend the work.

ADVANCE CONTRACT NEWS

ADVANCED INFORMATION BIDS ASKED FOR

To be of value this matter must be printed in the number immediately following its receipt, which makes it impossible for us to verify it all. Our sources of information are believed to be reliable, but we cannot guarantee the correctness of all items. Parties in charge of proposed work are requested to send us information concerning it as early as possible; also correction of any errors discovered.

CONTRACTS AWARDED ITEMIZED PRICES

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
STREET AND ROADS				
Wis.	Racine.....10 a.m., June	12..	Paving with brick.....	P. H. Connolly, City Mgr.
O.	Berlin Centre.....3 p.m., June	12..	Grading and macadamizing streets.....	S. M. Rakestraw, Clk.
O.	Wapakoneta.....1 p.m., June	12..	Road improvement.....	J. H. Meyer, Co. Surv.
Ind.	Kentland.....2 p.m., June	12..	Grading, paving and improving.....	S. R. Sizelove, Newton Co. Aud.
Wis.	Two Rivers.....7.30 p.m., June	12..	Grading, curbing and macadamizing.....	Board Public Works.
Wis.	Wauwatosa.....1 p.m., June	12..	Grading, curbing and paving with waterbound macadam.....	City Clerk.
O.	Hamden.....noon, June	12..	680 ft. brick paving.....	City Clerk.
O.	Utica.....June	12..	15,600 sq. yds. brick pavement.....	Edward Ottman, Vil. Clerk.
Wis.	Milwaukee.....10.30 a.m., June	12..	Pav. with sandstone & creosoted wood blk. & with brick.....	L. M. Kotecki, Controller
Mo.	Weston.....Noon, June	12..	10,000 yds. bitu. mac., 2,600 ft. conc. curb & gutter & retaining wall.....	T. Riley, City Clerk
Minn.	Fertile.....1 p.m., June	12..	Grading one mile of road.....	E. H. Wilkinson, Twp. Clk.
Wis.	Rhineland.....2 p.m., June	12..	Constructing cement walks for 1915.....	G. C. Jewell, Chr. B. P. W.
Mo.	Carthage.....8 p.m., June	14..	Grading streets and alleys.....	W. H. Rodgers, Street Commr.
N. D.	Portal.....June	14..	Constructing five grades.....	L. M. Wheeler, Clk. of Soo Twp.
S. D.	Yankton.....9 a.m., June	14..	Sidewalks in various streets.....	J. W. Summers, City Aud.
Tex.	Junction.....June	14..	Grading and graveling 7 miles of streets.....	J. B. Randolph, Co. Judge.
Wash.	Port Orchard.....June	14..	Grading and graveling 2 miles.....	County Auditor.
La.	Atlantic.....June	14..	Two miles paving with concrete.....	City Clerk.
Minn.	Crookston.....10 a.m., June	14..	Grading and filling.....	D. B. Ferguson, Clk. Huntsville Twp.
Pa.	Allentown.....5 p.m., June	14..	Grading and pav. with bitu. mac. or conc.....	Bascom & Siegler, Township Engrs., 505 Allentown Bk. Bldg.
Ind.	Kokomo.....10 a.m., June	14..	Cement sidewalks.....	Board of Public Works.
Wash.	Elma.....1.30 p.m., June	14..	Surfac. & pav. with sheet asphalt, asphaltic conc. & bitu. on conc. base; also conc. pavements, etc.; total cost, \$57,788.....	C. H. Palmer, Town Clk.
N. J.	East Orange.....8 p.m., June	14..	Concrete walk.....	L. E. Rowley, City Clerk.
N. J.	Newark.....3.30 p.m., June	14..	Concrete road.....	Fredk. A. Reimer, Co. Engr.
Wash.	Vancouver.....June	14..	2,100 yds. paving and 450 ft. curb.....	E. L. Dorman, City Engr.
Wash.	Seattle.....June	14..	Grading and graveling 8 miles of road.....	County Commissioners
Wash.	Olympia.....June	14..	Clearing, grading & draining 8.5 miles of road.....	State Hwy. Board
W. Va.	Grafton.....9 a.m., June	14..	Improving several streets.....	M. R. Fortney, Clk.
Mich.	Sault Ste. Marie.....4 p.m., June	14..	12,000 yds. bitu. coated conc. pave., curbs & approaches.....	Bd. Pub. Wks., A. J. Eaton, Sec.
Neb.	Central City.....7.30 p.m., June	14..	Cement crossings and walks.....	C. F. Newmyer, City Clk.
Vt.	Burlington.....2 p.m., June	15..	Constructing walks, curbs and gutters.....	City Engineer.
Mich.	Detroit.....June	15..	Excavating.....	City Engineer.
Md.	Baltimore.....Noon, June	15..	Building 4.4 miles of concrete road.....	O. B. Weller, State Roads Comm.
Minn.	St. Cloud.....3 p.m., June	15..	10,300 yds. concrete pavement.....	G. C. Magnuson, City Clk.
Pa.	Philadelphia.....June	15..	58,457 yds. bituminous pavement, 9,220 yds. vit. block, 17,490 ft. concrete curb and 7,257 ft. sewers.....	Dept. Public Works.
Ind.	Indianapolis.....10 a.m., June	15..	Grading, paving and improving.....	W. T. Patten, Marion Co. Aud.
N. J.	N. Brunswick.....2.30 p.m., June	15..	Bituminous concrete.....	A. B. Fox, Co. Engr., Perth Amboy.
N. Y.	New York.....11 a.m., June	15..	32,000 gals. rd. asphalt of græs. equal to Tarvia X. for Palisades Interstate Park.....	L. H. Smith, Asst. Sec. Palisades Interstate Park Commissioners, 61 Broadway
O.	Rocky River.....noon, June	15..	Grading, draining and paving.....	Frank Mitchell, Clk.
Wis.	Janesville.....2 p.m., June	15..	Concrete paving.....	Charles E. Moore, Co. Hwy. Comr.
Ore.	Eugene.....11 a.m., June	15..	3,450 lin. ft. and 1,100 lin. ft. road improvement.....	Stacey M. Russell, Lane Co. Clk.
Md.	Rockville.....noon, June	15..	1.38 miles state aid road.....	P. E. Clark, Clk. Co. Comm.
La.	Marshalltown.....June	15..	25 blocks paving.....	J. J. Wilson, City Clk.
O.	Columbus.....Noon, June	15..	Grading and paving drive.....	Geo. A. Borden, Dir. P. S.
Pa.	Wyoming.....7 p.m., June	15..	6,900 ft. asphalt or brick paving.....	Vint Breese, Boro Secy.
Ind.	Noblesville.....10 a.m., June	15..	Grading, paving and improving roads.....	W. O. Horton, Co. Aud.
Minn.	Center City.....1 p.m., June	15..	Grading, graveling and constructing culverts.....	Archie F. L. Stromgren, Co. Aud.
Minn.	St. Cloud.....2 p.m., June	15..	10,300 yards paving.....	Geo. G. Magnuson, City Clk.
La.	Amite.....June	15..	Constructing 8.25 miles dirt road.....	J. E. Kerrigan, Engr., Hammond
Tex.	Oakville.....3 p.m., June	16..	Constructing roads.....	W. W. Caves, Co. Judge
La.	Lancaster.....Noon, June	16..	Pav. with brick or asph. blk. & const. curbs, walks, etc.....	John A. Mayer, Dir. P. S.
Minn.	Mankato.....1 p.m., June	16..	Grading, graveling & const. culverts on several roads.....	C. L. Kennedy, Co. Aud.
Minn.	Delano.....2 p.m., June	16..	Grading and graveling.....	John A. Berg, Wright Co. Aud.
Md.	Easton.....June	16..	5,000 lin. ft. concrete curbs and gutters.....	J. B. Clark, Town Clk.
N. Y.	New York.....11 a.m., June	16..	Regulat., grad., curb, sidewalks, granite blk. & asph. pav.....	Maurice E. Connolly, Queens Boro Pres.
N. Y.	Albany.....1 p.m., June	16..	Improving highways in various counties.....	State Highway Commission.
O.	Cleveland.....10 a.m., June	16..	Road improvement.....	E. G. Krause, Clk. Co. Comm.
Kan.	Ft. L'nworth.....11 a.m., June	16..	Concrete pavement, walk, curb and gutter.....	Cap. H. E. Comstock, Const. Q. M.
N. J.	Newark.....3.15 p.m., June	17..	Repaving.....	City Clerk.
O.	Cincinnati.....Noon, June	18..	Improving roads.....	A. Reinhardt, Clk. Co. Com.
O.	Painesville.....Noon, June	18..	11.5 miles road construction.....	W. A. Davis, Sec. Co. Comrs.
O.	Steubenville.....1 p.m., June	18..	Constructing road.....	County Auditor
N. Y.	Albany.....1 p.m., June	18..	Improving about 84 miles highways in 12 counties.....	Edwin Duffey, State Hwy. Commissioner
Ind.	Bremen.....June	18..	Paving curbing, draining and excavating.....	F. F. Knoblock, Twn. Clk.

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
Ind., East Chicago	1.30 p.m., June	18..	Paving streets (8 jobs).....	T. Y. Richards, Clk. B. P. W.
O., Mentor.....	Noon, June	18..	1 1/4 mile brick paving.....	W. A. Davis, Painesville
Mich., Pickford.....	June	18..	Grad. & constructing roadway of crushed stone.....	K. I. Sawyer, Dep. Engr. Escanaba
Minn., Staples.....	2 p.m., June	19..	Road construction.....	A. Anderburg, Twn. Clk.
N. Y., Trudeau.....	8 p.m., June	19..	Grading and paving with bitu. macadam.....	C. S. Armstrong, Supt. Sanitarium
Wis., Racine.....	10 a.m., June	19..	3,200 cu. yds. grading.....	P. H. Connolly, City Engr.
O., Mt. Vernon.....	Noon, June	19..	Grading, paving, draining, curbing.....	City Engineer.
Ala., Selma.....	June	21..	Grading, draining and graveling 13 1/2 miles.....	Board of Revenue.
La., Baton Rouge.....	June	21..	Laying 170,000 yds. bituminous gravel with curbs, gutters, etc.; 22,000 yds. hard surface pavement on concrete base.....	J. J. Mundinger, City Engr.
Tex., Clarkesville.....	June	21..	St. impts., including 13,531 sq. yds. vertical fibre brick pavements on conc. base, 1,897 sq. yds. conc. pavements, 7,230 sq. yds. asphalt macadam, etc.....	E. F. Petersen, Eng. Muskogee, Okla.
Wash., Olympia.....	June	21..	Grading and graveling 3 1/2 miles of paving.....	Annie Gaston, Co. Aud.
Wash., Seattle.....	June	21..	Constructing road.....	Byron Phelps, Clk. Co. Comrs.
Minn., St. Paul.....	10.30 a.m., June	21..	Grad. curb. & improv. streets; 215 tons pitch filler.....	August Hohenstein, Pur. Agt.
N. J., Millburn.....	8 p.m., June	21..	Grading and macadamizing six streets.....	Wm. Byrd, Chr. Twp. Comm.
Wis., Elroy.....	8 p.m., June	21..	Macadamizing & placing concrete curbs & gutters.....	E. F. Champlin, Chr. St. Comm.
Utah, Ogden.....	10 a.m., June	21..	2-in. asphalt on 6-in. foundation.....	City Engineer
Md., Baltimore.....	June	22..	4.12 miles state highway.....	O. E. Weller, Chr. State Rds. Comm.
D. C., Washington.....	2 p.m., June	22..	Grading and improving streets and roads.....	Chief Clk. Engr. Dept., Room 427, Dist. Bldg.
Minn., Aitkin.....	1 p.m., June	22..	2 1/2 miles grading.....	H. C. Beecher, Co. Aud.
Md., Baltimore.....	Noon, June	22..	1.04 miles resurf., 2.03 miles conc. or mac. & 1 mile mac.....	O. E. Weller, Chr. State Rds. Comm.
N. Y., Binghamton.....	June	23..	Paving avenue.....	Clk. Bd. Contract & Supply.
Mich., Kalamazoo.....	Noon, June	24..	Road construction.....	Co. Clerk's Office, Court House
Wis., Shawano.....	7 p.m., June	25..	9,233 sq. yds. macadam and 3,763 lin. ft. curb and gutter.....	O. C. Rollman, Co. Hwy. Comr.
O., Cincinnati.....	Noon, June	25..	Road improvements.....	Bd. of Hamilton Co. Comrs.
O., Wyoming.....	Noon, June	25..	Cement sidewalks.....	G. H. Eversman, Vil. Clk.
O., Columbus.....	Noon, June	26..	Constructing 4,045 ft. road.....	F. S. Miller, Clerk.
O., Toledo.....	10 a.m., June	28..	Grading, draining and macadamizing.....	Lucas Co. Bd. of Comrs.
Ind., Portland.....	June	28..	Street improvement.....	City Clerk.
Wis., Green Bay.....	10 a.m., June	28..	Grading, curbing & guttering several streets.....	City Clerk.
Wis., Merrill.....	4 p.m., June	29..	Vit. brick pavement on concrete base (2 jobs).....	W. J. Kyes, City Clk.
O., Grand View Hgts.....	Noon, June	29..	Grad. & pav. with mac. & curbs, gut. & sidewalks of conc. binder; and also gravel rd.....	T. G. Constable, Vil. Clk.
O., Toledo.....	June	29..	Grad. drain and surf. with water bound mac. or bitu. binder; and also gravel rd.....	County Commissioners
O., Malvern.....	June	29..	Brick pav., 29,650 sq. yds. on natural gravel foundation, cement grout filler, 13,740 ft. conc. or stone curb, 745 ft. circular curb, 1,520 headers, 48 catch basins, 2,570 ft. 12-in. sewer.....	J. G. Murdson, Clerk
Fla., De Land.....	June	30..	35.96 miles roadway and 17.47 miles either brick, street asph., asphal. conc., modified asph., asphal. mac. or shell.....	Sam'l. D. Jordan, Clk. Co. Commissioners
Pa., Lebanon.....	5 p.m., July	1..	Street paving, about 24,700 sq. yds.....	T. R. Crowell, City Engr.
O., Oak Hill.....	July	1..	Curbing and paving; road construction.....	City Clerk.
Pa., Pittsburgh.....	1.30 p.m., July	12..	County highway tunnel.....	A. D. Need, Cons. Engr., 237 4th Ave.
O., Tiffin.....	July	25..	25,800 sq. yds. brick and crushed stone or concrete base, 15,600 ft. sandstone or concrete curb, excavation, etc. for four streets.....	O. J. Oberlander, City Engr.
SEWERAGE				
Wis., Racine.....	10 a.m., June	12..	Sewer construction.....	City Clerk
Ill., Ottawa.....	10 a.m., June	14..	Constructing sewer system.....	City Engineer
Ia., Cedar Falls.....	7.30 p.m., June	14..	Storm sewers in several streets.....	W. T. M. Aitkin, City Clk.
Minn., Little Falls.....	8 p.m., June	14..	Constructing 12-inch sewer in several streets.....	Victor Schallern, City Clk.
Wis., Ripon.....	4 p.m., June	14..	2,546 ft. 8-in. sanitary sewer.....	J. W. Pierce, City Clk.
Pa., Uniontown.....	Noon, June	14..	Sanitary sewers.....	L. G. Moslener, Boro. Engr., Snowden Bldg., Brownsville, Pa.
Minn., St. Paul.....	10.30 a.m., June	14..	Sewer construction.....	A. Hohenstein, Pur. Agt.
Conn., Greenwich.....	8 p.m., June	14..	22,500 ft. sewers.....	S. E. Minor, Engr. Sewer Comrs.
Mich., Bay City.....	9 a.m., June	14..	10 and 12-in. socket tile sewers.....	City Comptroller
O., West Carrollton.....	Noon, June	15..	Sanitary storm sewers, sewage disposal plant, sewer pipe, etc.....	H. J. Wilson, Vil. Clk.
Ont., Burlington.....	June	15..	Sanitary storm sewers, sewage disposal plant, sewer pipe, etc.....	Town Clerk.
N. J., Bayonne.....	4 p.m., June	15..	Sewer repairs.....	City Engineer
Ind., South Bend.....	10 a.m., June	15..	Pipe sewer.....	Dept. Public Works.
S. D., Sisseton.....	2.30 p.m., June	15..	30,395 ft. 8 to 15-in. vit. clay pipe, 78 manholes, 7 flush tanks and 6 lamps holes.....	Casper Kennedy, Mayor.
N. C., Winston-Salem.....	June	15..	Extending sewer lines 2 1/2 miles and constructing sewage disposal plant.....	J. L. Ludlow, Engineer
N. Y., Perrysburg.....	11 a.m., June	16..	Additional sewage disposal plant.....	F. G. Ward, Comr. P. W., Buffalo
Minn., Cloquet.....	5 p.m., June	16..	Constructing sewer system.....	J. A. Parks, City Clerk
Tenn., Cleveland.....	June	16..	Sewer system to cost \$75,000.....	C. A. Mee, Mayor
N. J., Woodbridge.....	8.30 p.m., June	16..	2,120 ft. 8 and 10-in. vit. pipe sewer.....	A. Keyes, Twp. Clk.
Mich., Flint.....	3 p.m., June	16..	Sanitary sewer construction.....	City Engineer.
Ind., Frankfort.....	2 p.m., June	17..	Sewer construction comprising 10,000 ft. 6 to 15-in. sewer, 25 manholes, etc.....	R. H. Boynton, City Engr.
Miss., Okolona.....	8 p.m., June	18..	Sewer construction, requiring 11,550 cu. yds. earth excavation and 9,600 cu. yds. rock excavation, and furnishing and laying 34,700 ft. of 8-in. and 10-in. pipe and 4,440 ft. 12-in. pipe.....	Frank L. Wilcox, Engr., Syndicate Tr. Bldg., St. L. Mo.
Mo., St. Louis.....	Noon, June	18..	Constructing sewers in several streets.....	W. T. Fingly, Sec. B. P. S.
Ill., Chicago.....	11 a.m., June	18..	Constructing sewer system.....	E. J. Glackin, Sec. B. L. I.
Minn., St. Paul.....	10.30 a.m., June	21..	Constructing sewer.....	Aug. Hohenstein, Pur. Agt.
N. J., Millburn.....	8 p.m., June	21..	8-in. vit. tile sanitary sewer.....	M. R. Silance, Twp. Clk.
Ill., Chicago.....	June	24..	Constructing intercepting sewer.....	John McGillen, Clk. Sanitary Dist., 910 Mich. Ave.
Wis., Waupaca.....	4 p.m., June	25..	About 2,952 ft. 8-in. vit. pipe or cement sewer.....	H. E. Gordon, Chr. B. P. W.
Ill., East St. Louis.....	2 p.m., July	7..	Constructing outlet sewer.....	G. L. Tarlton, Pres. Bd. Trust.
O., Columbus.....	Noon, July	16..	Disposal plant and sewer system for Infirmary.....	John Scott, Clk. Co. Comrs.
WATER SUPPLY				
Wis., Peshtigo.....	7.30 p.m., June	12..	Constructing concrete cistern.....	F. J. Hailing, Chr. Bd. Pub. Wks.
S. D., Belle Fourche.....	5 p.m., June	14..	Water main extension.....	F. E. Bennett, City Aud.
Del., Wilmington.....	10.30 a.m., June	14..	One centrifugal pump and motor.....	E. M. Hoopes, Ch. Eng. Bd. Water Comrs.
O., East View.....	11 a.m., June	14..	Laying water mains and constructing sidewalks.....	Pease Engrg. Co., Cleveland.
O., Napoleon.....	June	14..	Water softening and filter plant.....	W. G. Clark, Spitzer Bldg., Toledo.

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
Wis., Kenosha	June 14..	Constructing 42-in. c-i. intake pipe, 10,000 ft. long, intake crib and well.....	B. C. Brennan, City Engr.
Pa., Lock Haven	1 p.m., June 14..	Construction of portion of storage dam, including 560 yds. concrete and about 11,000 yds. earth excavation....	H. P. Shoemaker, City Engr.
Neb., Hastings	5 p.m., June 14..	Water main	City Engineer.
N. Y., New York	2 p.m., June 14..	Venturi meter tubes and recording apparatus for connections from Catskill Supply.....	William Williams, Comr. Water Supply, Gas & Electricity.
D. C., Washington	2 p.m., June 14..	7,000 $\frac{5}{8}$ -in. water meters.....	Pur. Officer, Room 320 Dist. Building
Del., Wilmington	10.30 a.m., June 14..	Centrifugal pump and motor.....	E. M. Hoopes, Jr., Ch. Engr.
Minn., Campbell	7.30 p.m., June 15..	Water system	J. F. Duvar, Engr., Commercial Bldg., St. Paul.
Que., Montreal	noon, June 15..	Constructing storage water dam	L. Lefebvre, Ch. Engr. Quebec Streams Commission.
Minn., Bird Island	June 15..	Extending water mains.....	C. A. Strom, Vil. Recorder
Utah, Salt Lake City	10 a.m., June 16..	Constructing 5,000,000-gal. reinforced conc. reservoir...	K. A. Scheld, City Rec.
Wash., Tacoma	2 p.m., June 17..	30-in. hydraulically-operated gate valves of standard make	James C. Drake, Comr. Lt. & Water.
Wis., River Falls	8 p.m., June 17..	Laying 1,500 ft. c. i. pipe & setting valves & hydrants...	F. V. Williams, Street Comr.
Mass., Salem	June 21..	Two 10,000,000-gallon steam pumps.....	G. F. Ashton, City Engr.
Mo., Butler	June 22..	Water works improvements to cost \$40,000.....	H. G. Cook, Mayor
N. Y., New York	11 a.m., June 22..	Coagulating plant consisting of steel structure and steel bunker for storing about 600 tons sulphate of aluminum and conveyor; bronze or steel ladders, nozzles, etc., for Catskill Aqueduct line.....	W. Bruce Cobb, Secy. Comrs. Bd. Water Supply
Mo., St. Louis	Noon, June 22..	2,595 tons 3, 6, 8, 12, 20, 30 and 36-in. c. i. coated water pipe; also 350 tons c. i. coated special castings; also 297 3, 4, 6, 8, 12, 20 and 30-in. stop and tapping valves; 850 fire hydrants and hydrant top parts.....	E. R. Kinsey, Pres. Bd. Public Service
Neb., Lincoln	2 p.m., June 22..	500 h.p. water tube boiler with chain grate stoker for city water plant.....	City Clerk
Ont., Stratford	9 a.m., June 25..	Elevated water tower	F. A. Gaby, Ch. Engr. Hydro-electric Power Comm., Continental Life Bldg., Toronto.
Ark., Harrison	June 25..	Water works to cost \$25,000.....	G. W. O'Neal, City Secy.
O., Euclid	Noon, June 28..	6-inch water main	H. S. Dunlop, Vil. Clk.
O., Columbus	July 1..	Dam waste weir & flood regulation gates at reservoir....	J. I. Miller, Supt. P. W.
LIGHTING AND POWER				
Cal., Los Angeles	2 p.m., June 14..	Installing and maintaining street lighting.....	H. J. Lelande, Clk., Bd. Co. Supv.
Wis., Milwaukee	10.30 a.m., June 16..	Lighting streets with incandescent gas lamps.....	L. M. Kotecki, Controller
Minn., St. Paul	10.30 a.m., June 21..	Incandescent lamps for one year.....	Aug. Hohenstein, Pur. Agt.
D. C., Washington	July 3..	Extension to bldg. & install. new equip. at boiler plant...	Bu. of Yds. & Docks, N. Dept.
Okla., Adamson	Sept. 20..	Electric light plant.....	Frank Mann, Engr.
FIRE EQUIPMENT				
N. J., Montclair	June 14..	2,000 ft. hose.....	Harry Trippett, Town Clk.
N. Y., New York	10.30 a.m., June 14..	Furnishing and applying 26 2-wheel gasoline-driven tractors, 16 for fire engines and 10 hook and ladder trucks.....	Robt. Adamson, Fire Comr.
Mo., St. Louis	Noon, June 15..	5 auto. combination pumping engine & hose wagon....	Jos. B. Thomas, Fire Comr.
N. Y., New York	10.30 a.m., June 16..	5,000 ft. 2 $\frac{1}{2}$ -in. and 5,000 ft. 3 $\frac{1}{2}$ -in. fire rubber hose; 20,000 ft. 2 $\frac{1}{2}$ -in. and 10,000 ft. 1 $\frac{1}{2}$ -in. cotton rubber-lined fire hose.....	Robt. Adamson, Fire Comr.
N. Y., Freeport	June 16..	Furnishing 1,000 ft. rubber hose.....	H. E. Pearsall, Chief
Minn., Cloquet	5 p.m., June 16..	Installing fire alarm and police patrol system.....	J. A. Parks, City Clk.
D. C., Washington	10 a.m., June 22..	Rubber fire hose for Puget Sound, Wash., Navy Yard....	S. McGowan, Paymaster Gen., U. S. Navy.
BRIDGES				
Ill., Edford	2.30 p.m., June 12..	Superstructure with concrete floor.....	Jas. H. Reed, Co. Supt. Hwys., Cambridge, Ill.
Ill., Mt. Sterling	1 p.m., June 12..	Reinforced concrete or steel bridge.....	W. O. Grober, Co. Supt. Hwys., Brown Co.
Ind., Richmond	11 a.m., June 12..	Constructing reinforced concrete culvert.....	L. S. Bowman, Co. Aud.
O., Bucyrus	Noon, June 12..	162-ft. span and three other bridges.....	H. A. Blebighauser, Co. Aud.
Ill., Danville	11 a.m., June 12..	30-foot highway bridge	J. F. Fisher, Engr., Garrett Bldg.
Ont., Cayuga	June 14..	Ten reinforced conc. highway bridges, 6 to 32-ft. span..	Chairman Good Roads Comm.
Wash., Olympia	June 14..	468-foot span steel cantilever.....	State Highway Commission.
O., Ashland	noon, June 14..	Constructing or repair of 7 county bridges.....	B. F. Hay, Chr. Bd. Co. Comrs., Ashland Co.
Wash., Mayfield	2 p.m., June 14..	Cantilever steel bridge.....	State Highway Commission, Olympia.
Minn., Duluth	10 a.m., June 14..	Reinforced concrete bridge.....	Jas. A. Farrell, Com. P. W.
Minn., Fond du Lac	10 a.m., June 14..	Reinforced concrete bridge over Mission Creek.....	W. H. Borgen, Clerk
Minn., Thief River Falls	June 15..	24-foot I-beam bridge.....	Town Clerk
Minn., Millville	2 p.m., June 15..	Constructing five bridges.....	County Auditor, Wabasha
Md., Elkridge	June 15..	196-ft. span reinforced concrete bridge.....	State Hwy. Comm., Baltimore
Cal., Eureka	2 p.m., June 15..	Three bridges	Fred M. Kay, Clk. Co. Supv.
Neb., Center	5 p.m., June 15..	Three concrete girder bridges.....	M. T. Liewer, Co. Clerk.
Minn., Lake City	2 p.m., June 15..	Five bridges	State Hwy. Comm., St. Paul
O., Sidney	June 15..	20-foot span concrete arch bridge.....	G. P. Staley, Co. Aud.
Tex., Laredo	10 a.m., June 15..	Two reinforced concrete bridges.....	J. S. Westbrook, Chr. of Com.
Pa., Milroy	10 a.m., June 16..	Constructing three reinforced concrete bridges.....	Township Supervisors.
Ga., Rome	June 16..	Tearing down and rebuilding 3 bridges.....	J. D. Pollock, Chr. Roads & Revenues Commission.
Minn., Mallory	10 a.m., June 16..	Grading, filling and removing old bridge.....	D. E. Ferguson, Clk.
Mont., Sentinel Butte	10 a.m., June 18..	Bridge construction	M. C. McCarthy, Co. Aud.
Pa., Newcastle	Noon, June 18..	Constructing steel or iron bridge.....	J. R. Lamoree, Clerk
Minn., Cedar	2 p.m., June 18..	Constructing two bridges.....	Albert Hoevet, Twn. Clerk
Minn., Luzerne	10 a.m., June 18..	Concrete abutments and beam span bridge.....	J. Stoterau, Chr. Twn. Board
N. D., Beach	10 a.m., June 18..	Bridge	M. C. McCarthy, Co. Aud.
O., Cincinnati	Noon, June 18..	Concrete retaining wall	F. E. Wesselmann, Pres. Hamilton Co. Comrs.
O., Hamilton	10 a.m., June 19..	Constructing concrete bridge	W. W. Crawford, Co. Aud.
Cal., Needles	2 p.m., June 19..	Steel highway bridge	Commissioner of Indian Affairs, Washington, D. C.
D. C., Washington	2 p.m., June 19..	Steel highway bridge over Colorado River at Mohave City, Ariz.	Cata Sells, Comr. Indian Affairs

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
O., Akron.....	11 a.m., June	21..	Reconstruction of abutment.....	County Comrs.
O., Clinton	11 a.m., June	21..	Reconstructing abutment	C. L. Bower, Summit Co. Clk.
Minn., Little Falls.....	2 p.m., June	22..	Reinforced concrete culvert	B. Y. McNairy.
O., Hamilton.....	10 a.m., June	23..	Constructing retaining wall.....	K. W. Crawford, Co. Aud.
Wis., Ellsworth.....	2 p.m., June	23..	Bridge construction	H. G. Eklund, Chr. Twn. Bd.
Minn., Westbrook.....	1 p.m., June	24..	Constructing steel & concrete bridges.....	L. L. Hedman, Twn. Clk.
O., Cincinnati.....	Noon, June	25..	Constructing culvert	Albert Reinhardt, Clk. of Bd.
Wash., Seattle	June	25..	Two steel draw bridges to cost \$880,000.....	A. L. Valentine, Chr. B. P. W.
O., Lebanon.....	June	28..	160 ft. high truss steel bridge, creosoted block floor and concrete abutments	John M. Mulford, Co. Aud.
La., Lake Charles.....	July	1..	Reinforced conc. bridge, costing \$100,000.....	Police Jury
O., Cincinnati.....	Noon, July	2..	Retaining wall and steel plate for bridges.....	F. E. Wessellman, Pres. Bd. Hamilton Co. Comrs.
Cal., Santa Ana.....	July	6..	Bridge	City Trustees
Ore., Gold Beach.....	July	7..	Reconstructing Elk River bridge.....	J. M. Caughell, Co. Engr.
MISCELLANEOUS				
D. C., Washington.....	June	15..	Supplies for Navy Department.....	Bu. of Sups. & Accts.
N. J., Trenton	Noon, June	15..	Barnegat-Manasquan Canal construction.....	W. A. Maupay, Comr. Inland Waterways.
O., Cincinnati	noon, June	17..	Two one-ton motor trucks.....	Ernst Von Bargen, City Pur. Agt.
S. D., Lead.....	4 p.m., June	17..	Excavating earth & rock & placing dry rubble & conc.....	L. D. Lea, City Engr.
D. C., Washington.....	2 p.m., June	21..	Construction Postoffice at Cuero, Texas.....	J. A. Wetmore, Act. Sup. Arch.
O., Hamilton	10 a.m., June	23..	Constructing revetment	W. W. Crawford, Co. Aud.
D. C., Washington.....	3 p.m., June	24..	Construction complete of Post Office at Mt. Vernon, N. Y.....	J. A. Wetmore, Acting Supv. Architect.
Mich., Detroit	10 a.m., June	24..	Garbage reduction plant.....	Geo. H. Fenkell, Comr. Pub. Wks.

STREETS AND ROADS

Birmingham, Ala.—One of the first roads to be made perfect in Etowah county expenditure of \$200,000 for that purpose will be the route between this city and Gadsden.

Montgomery, Ala.—State aid appropriations of \$2,038, for 1915, will be sent to counties of Pike, Conecuh, Bullock, Tuscaloosa, Crenshaw, Marengo, Marion, Morgan, Randolph, St. Clair, Jefferson and Lowndes by state highway commission, according to announcement made at office of W. S. Keller, state highway engineer. Appropriations of \$3,271 for 1914 will be sent to Pike, Conecuh and Tuscaloosa. In Pike County, a state-aid bridge over the Conecuh River, near Goshen, costing \$14,000, will be constructed.

Safford, Ariz.—The Graham County Board of Supervisors, consisting of Geo. Foote, James Quinn and Geo. Mathews, accompanied by Road Commissioner Dolph Foote and Secretary Joe Sullivan, of Safford Chambers of Commerce, made a personal investigation of proposed new road between the San Carlos and Gila River bridge. This route was surveyed some time ago by experienced engineer, who estimated it would cost \$40,000 to build the 11 miles of road, that is connecting link between Graham and Gila counties.

Tucson, Ariz.—A unanimous indorsement has been given by members of Tucson Luncheon Club to report of committee of 15 recommending issuance of bonds by Pima County to sum of \$400,000 approximately for building of comprehensive system of good roads in Pima County, including Mt. Lemmon Road at estimated cost of \$100,000.

San Francisco, Cal.—Board of Works has resolved to pave Missouri St., between 19th and 20th, with asphalt on sides and basalt blocks in middle.

San Francisco, Cal.—The Supervisors' street committee has decided on improvement of following unpaved blocks at property owners' expense: 19th Ave. from Noriega to Quintara Sts.; Vermont St. from 20th to 21st; 17th and 18th Aves. between Taraval and Ulloa Sts.; Quesada and Revere Aves. between Railroad Ave. and Lane St. Committee recommends that Van Ness Ave., between North Point and Beach Sts., in front of Fort Mason, be graded, curbed and paved and that sidewalks be laid there. The cost, estimated at \$9,000, is to be paid by the city.

Boulder, Colo.—A new road, about one mile long, is to be built from Copeland Park north toward county limits to afford a better road into Estes Park. Commissioners have authorized call for bids for construction of the road.

Montrose, Colo.—County commissioners at Montrose and forest service have entered into co-operative agreement which will insure completion of road from Montrose to the Horefly Valley, in Montrose County, during next two years. This road, when completed, will form link in highway between Montrose

and Paradox Valley, and will be of great importance in development of country in and contiguous to Horsefly Valley and along San Miguel River.

Darien, Conn.—A meeting will be held in Darien Town Hall to discuss proposed laws creating position of superintendent of highways and authorizing issuance of bonds up to \$150,000 for highway purposes.

Dover, Del.—At meeting of Kent County Levy Court court authorized county treasurer, president of Levy Court and clerk of peace to issue \$15,000 bonds for good roads improvement in Kent County. Of \$30,000 bond issue in 1913 there yet remains \$3,000 available.

Wilmington, Del.—Regardless of possible litigation, General T. Coleman du Pont has announced that he will build an 18-mile stretch of improved highway connecting towns of Georgetown and Selbyville, in Sussex county, as part of his original project to build state-long highway as gift to people of Delaware.

Washington, D. C.—An American consular officer in Greece reports that a firm in his district desires to purchase stone crusher to be used in laying macadamized streets and suburban highways. The firm also desires to purchase traction engine to be used in this connection. Catalogues, price lists, etc., should be sent to American consular officer. Quotations should be made c. i. f. destination. It is stated that firm is in position to make partial cash payment with order, remainder to be paid in installments. No. 17,017, Bureau of Manufactures.

Lake City, Fla.—Board of county commissioners has called election in Columbia County for and against bonding county for \$250,000, this amount to be used for purchasing of brick, to be used for building system of brick roads in Columbia County. A. S. Miller is City Engineer.

Lake City, Fla.—In relation to paying contract for a \$20,000 investment in city, bids of Florida National Vault Co., of Lakeland, has been accepted, conditionally, by board of public works.

West Palm Beach, Fla.—The bond election to raise \$800,000 for good roads in Palm Beach County has been carried by a three to one majority. The major part of this money will be spent on Dixie highway, which traverses Palm Beach County. This road will be built 15 ft. wide its entire length through the county, and will be of rock with an oil asphaltum surfacing. Each commissioner's district of the county will be allowed \$50,000 for building lateral roads, and bond issue also provides for construction of bridge over St. Lucie River at Stuart. Other bridges, wherever necessary, will be built.

West Palm Beach, Fla.—With passage in this county of a bond issue of \$800,000 for oiled roads, the "million-dollar highway" for South Florida was assured, two bond issues of \$100,000 each having been recently passed in Dade County to build oiled boulevard from north county line to Cape Sable in its southern extremity. The Palm Beach

bonds carried by majority of nearly 4 to 1.

Indianapolis, Ind.—Board of Public Works will undertake experiment in resurfacing South Pennsylvania St. from Maryland St. to Union railway tracks. An asphalt top, 2 ins. thick, will be applied on top of old brick pavement. Work will be done by city asphalt repair plant and cost assessed against owners of abutting property.

Indianapolis, Ind.—Widening and resurfacing of North Meridian St. is being discussed.

LaPorte, Ind.—Property owners on Alexander St., between Indiana Ave. and A St. will be given choice of brick or creosoted wood blocks as paving material. Bids on three materials were received and while board passed preliminary resolution for brick, property owners will be consulted and, if wood block is desired, that will be the material used. Lowest bid on concrete for Alexander St. was that of L. V. Barcus & Co., of this city, \$2,042.30, which is \$1.12 per sq. yd. or \$1.61 per ft. front. The lowest on brick was that of George Gross, \$3,243.27, or \$1.84 per sq. yd., or \$2.56 per ft. front. George Gross also made the lowest bid on creosoted block, \$3,483.27, or \$2 per sq. yd., or \$2.76 per ft. front.

Muncie, Ind.—An improvement resolution providing for construction of cement sidewalk on east side of Plum St. from Fifth St. to south line of Lot No. 167 has been adopted by members of special committee of council.

Portland, Ind.—Improvement of four streets has been ordered by City Council.

Portland, Ind.—Council has ordered preliminary plans and specifications for improvement of Commerce St., from Main St. south to Water St.; Ship St., south from Main St. to 2d St.; Pleasant St., north from Water St. to Votaw St., and Arch St., west from Meridian St. to Western Ave.

South Bend, Ind.—Resolutions for paving Jaquet Court, from Prairie Ave. to Chapin St.; for sewer on Corby St., from North St. Louis St. to Niles Ave., and for macadamizing Tonti Ave., from Tecumseh Ave. to Lafayette St., have been ordered by board of works.

South Bend, Ind.—Plans are being made for widening of Mishawaka Ave. and Eddy St.

Council Bluffs, Ia.—With Mayor Snyder casting deciding vote, City Council went on record as favoring immediate paving of unpaved strip in center of Broadway from 14th St. to river and against including of any paving on Ave. A or B with proposed Broadway pavement, as had been proposed.

Oskaloosa, Ia.—County road engineers are starting important improvement on New Sharon-Oskaloosa Road, in straightening of channel of Middle Creek, preparatory to building of new concrete bridge at that point.

Sioux City, Ia.—A paving program calling for more than two miles of concrete paving has been mapped out by Council when it adopted resolutions of necessity for paving in various parts.

of city. Resolutions call for 24 blocks of paving. Council intends to follow with paving of several main traveled roads leading into city.

Waterloo, Ia.—Extensive improvements are being made on Fourth St., between Washington and Wellington Sts. The brick pavement is to be replaced with asphalt.

Emporia, Kan.—A petition for paving Cottonwood St. between South and Sixth Aves. has been received by City Commissioners.

Leavenworth, Kan.—At regular meeting of City Commissioners resolution was adopted instructing City Engineer Perkins to notify railroad companies that an 18-in. concrete paving was necessary on Choctaw St. at 3d, 4th and 5th Sts. A resolution calling for paving with brick of 6th St. from Oak to Chestnut Sts. was placed on its first reading; also resolution providing for paving of Linn St. from 2d Ave. to 4th St. and providing for the brick paving of Olive St. from Main to 2d Sts.

Newton, Kan.—Resolution has been adopted for paving of Eighth St. from Ash on the west to Santa Fe right of way on east and on Walnut St., from First St. to Broadway. City attorney was instructed to prepare resolution providing for uniform curb and gutter on South East Second St., from Emmarella St. to Elm St.

Newton, Kan.—Petitions for paving several streets have been presented, and resolutions passed for same.

Pittsburg, Kan.—Bids are now to be secured for building of proposed Frontenac-Pittsburg permanent road. County Engineer W. E. Robson has submitted his estimates on cost of road using various materials. His figures indicate that permanent road connecting two cities will cost between \$9,000 and \$25,000. Following are estimates submitted by county engineer: 8-in. layer of 8-in. rock, 4-in. layer of 4-in. rock, 6-in. layer of cherts, 1½ miles long and 16 ft. wide, \$12,672; macadam 8 ins. thick, 8-in. rock, rolled and interstices filled with 4-in. rock and again rolled, then 2-in. layer of chat, spread over top and rolled in, \$8,500; 6-in. concrete pavement, \$14,080; 3-in. "National Pavement," \$15,483; brick or brick block on 4-in. concrete base with sand filler, \$21,120; macadam, 1 mile long, 9 ft. wide, \$3,200; 6-in. concrete road, 9 ft. wide, with 3-ft. berms on each side, \$7,000.

Pittsburg, Kan.—Ordinance has been passed to provide for paving of Woodland Ave. from Seventh to Ninth St. with brick and concrete base.

Smith Center, Kan.—Purchase of engine to cost \$2,000 for highway grading is being considered.

Portland, Me.—Excepting State road work, estimated cost of which will be more than \$17,000, over \$40,000 will be spent on permanent improvement this summer. These figures are only estimate of what work will cost and it is possible for them to vary considerably. Granite block paving will be put on St. John St. in front of the Maine Central offices, and on Preble St., between Lancaster and Kennebec Sts., the estimated cost of the two jobs being about \$7,000. Hassamite will be laid on Bishop Sq. and St. Lawrence St. at an estimated cost of a little more than \$9,000. Franklin St., between Federal and Middle, Deering St., between High and State and Winter St., between Danforth and Pine, will be done in bituminous macadam at an estimated cost of over \$9,000. In addition to this the relaying of the block paving in Monument Sq. and on Congress St. will, it is estimated, cost about \$15,000 and the joint city and State fund for the construction of the State highway will be over \$17,000. In addition to this there is the usual work on new sidewalks, relaying sidewalks, sewer construction and miscellaneous expense, bringing total cost of department and its work up to \$241,617.25.

Bay City, Mich.—City Engineer Henry C. Thompson and his corps of assistants have completed task of making totals on bids presented for this year's paving work in Bay City. P. Ryan is lowest bidder on all brick work where he presented bids, which were on all streets with exception of two or three. The Cleveland Trinidad Paving Co. was only bidder on bitulithic work. The Cleveland Trinidad Paving Co. bid lowest on Harrison, Madison, Germania, Main and John Sts., for sheet asphalt, while Johnson Construction Co. was lowest bidder for same material on Johnson and Lafayette, Michigan and Kosciuszko Sts. The Williamston Construction Co. bidding in brick are lowest bidders for Harrison

St., while P. Ryan bid lowest on Madison, Johnson, Lafayette, Germania, Main and John Sts., on brick.

Cadillac, Mich.—City, through its Board of Trade, is about ready to contract for construction of 2½ miles of a 16-ft. concrete roadway for a boulevard drive in territory adjacent to city. O. E. Carr is general manager.

Flint, Mich.—On recommendation of street committee all bids for construction of pavements on Lewis St. from Richfield road to Broadway and on Broadway from Lewis to the Hamilton bridge have been rejected and work ordered done by city.

Sherman, Mich.—A special election is to be held in Sherman township, Osceola county, on proposition to bond for \$10,000 to construct good roads.

Duluth, Minn.—Bids have been opened by Secretary Culver of public works division for paving of First St. from 28th Ave. east to Congdon Park; Sixth St. from 15th to 18th Aves. east; 16th Ave. east, from Sixth to Eighth Sts., and Exeter St. The figures will not be available until to-morrow. Bids on various jobs follow: East First St., General Contracting Co. of Minneapolis, George R. King and P. McDonnell; East Sixth St. and 16th Ave. east, August Bodin & Son, P. McDonnell, George R. King and General Contracting Co., and Exeter St., P. McDonnell, Olson & Johnson, J. D. O'Connell, D. H. Clough, August Bodin & Son, Rogers & McLean and J. W. Preston.

Eveleth, Minn.—City Commissioners have opened bids for paving six blocks. Bids were received from Lawrence-McCann Co. and Eveleth Construction Co., both local concerns. They bid on several different kinds of paving and Council put off final action. It is said that tenders of Lawrence-McCann Co. are generally the lower.

St. Paul, Minn.—Council has passed final order for grading of Lansing, from Albert to Hamline. Estimated cost of this job is \$1,049, or 90½ cts. a foot. Final order for grading of Oxford, from Rondo to Minnehaha, 13 blocks, at estimated cost of \$7,499, or \$1.18 a front ft., was laid over.

St. Paul, Minn.—City Council has approved action of contracting committee in rejecting bids for paving of portions of South Wabasha, Winifred and George Sts., and authorized purchasing agent to buy material to permit city to do work by force account. City engineer's estimate for this was \$49,226 and General Contracting Co.'s bid \$52,885.

Meridian, Miss.—An election that will decide whether funds will be provided to connect city paved streets with good roads will be held June 10, and so far there has been very little discussion of matter, opinion being general that there would be practically no opposition. The amount of bonds proposed to be issued is \$50,000.

Chillicothe, Mo.—Petition, which was signed by majority of property owners on Third St., between Washington and Dickenson Sts., has been presented to City Council, asking for paving of that street with brick. Petition was accepted and city engineer instructed to prepare proper resolution and specifications for the work.

St. Joseph, Mo.—Ordinances have been adopted for paving of various streets in city.

St. Joseph, Mo.—The Noyes Blvd. ordinance, which has been introduced, calls for 30,000 sq. yds. of asphaltic concrete paving, 13,050 ft. of curb and gutter, 100,000 sq. ft. of sidewalks, 600 ft. of cross gutters, 1,500 sq. yds. of paving in alleys. An ordinance also was introduced providing for paving Blvd. A, starting at Mitchell Ave., running north on 21st St. to Patee St., thence west to 30th.

Fremont, Neb.—City has just created paving districts, which comprise forty blocks. Bids will shortly be advertised. L. M. Roessler is City Engr.

Fremont, Neb.—The 27 blocks of pavement approved by Councilmanic order within last few days will account for improvement of following stretches: East Fourth St. from D to Platte, five blocks; West Military from Broad to 50 ft. west of the Burlington railroad, 9 blocks; West Eighth from Main to Nye, 5 blocks; West Ninth from Main to Nye, 5 blocks; Nye from Military to Tenth, 3 blocks.

Hastings, Neb.—City council has called special election for June 29, to vote on issue of \$50,000 of intersection bonds.

Omaha, Neb.—Following bids have been accepted by city as lowest for Districts Nos. 1404, 1405, 1482, 1486, 1493,

1495, 1498 and 1499. Street Improvement District No. 1404, 45th Ave. from Fontenelle Blvd. to Maple St.: Asphalt pavement, class B, \$1.82 per sq. yd.; asphaltic concrete pavement, class A, \$1.62; brick block pavement, class B, \$2.16; vertical fiber brick pavement, class A, \$2.05; artificial stone pavement, class A, \$1.46; Colorado stone curb, class No. 2, 85 cts. per lin. ft.; Kettle River stone curb, class No. 2, 84 cts.; artificial stone combined curb and gutter, class A, 51 cts.; artificial stone curb, class No. 1, 54 cts.; artificial stone curb, class No. 2, 48 cts. Street Improvement District No. 1405, Miami St. from 45th St. to Fontenelle Blvd.: Asphalt pavement, class B, \$1.82 per sq. yd.; asphaltic concrete pavement, class A, \$1.62; brick block pavement, class B, \$2.16; vertical fiber brick pavement, class A, \$2.05; artificial stone pavement, class A, \$1.45; Colorado stone curb, class No. 2, 85 cts. per lin. ft.; Kettle River stone curb, class No. 2, 84 cts.; artificial stone combined curb and gutter, class A, 52 cts.; artificial stone curb, class No. 1, 54 cts.; artificial stone curb, class No. 2, 46 cts. Street Improvement District No. 1482, Ninth St. from Hickory St. to Dorcas St.: Asphalt pavement, class B, \$1.82 per sq. yd.; asphaltic concrete pavement, class A, \$1.62; brick block pavement, class B, \$2.12; vertical fiber brick pavement, class A, \$2.02; artificial stone pavement, class A, \$1.46; Colorado stone curb, class No. 2, 85 cts. per lin. ft.; Kettle River stone curb, class No. 2, 84 cts.; artificial stone combined curb and gutter, class A, 53 cts.; artificial stone curb, class No. 1, 49 cts.; artificial stone curb, class No. 2, 46 cts. Street Improvement District No. 1486, Frances St. from Eighth St. to 10th St.: Asphalt pavement, class B, \$1.82 per sq. yd.; asphaltic concrete pavement, class A, \$1.62; brick block pavement, class B, \$2.12; vertical fiber brick pavement, class A, \$2.02; artificial stone pavement, class A, \$1.45; Colorado stone curb, class No. 2, 85 cts. per lin. ft.; Kettle River stone curb, class No. 2, 84 cts.; artificial stone combined curb and gutter, class A, 51 cts.; artificial stone curb, class No. 1, 49 cts.; artificial stone curb, class No. 2, 46 cts. Street Improvement District No. 1493, 34th St. from California St. to Webster St.: Brick block pavement, class B, \$2.30 per sq. yd.; vertical fiber brick pavement, class A, \$2.24; artificial stone pavement, class A, \$1.59; Kettle River stone curb, class No. 2, 88 cts. per lin. ft. Street Improvement District No. 1495, 38th St. from Hamilton St. to north line of Seward St.: Asphalt pavement, class B, \$1.87 per sq. yd.; asphaltic concrete pavement, class A, \$1.67; brick block pavement, class B, \$2.15; vertical fiber brick pavement, class A, \$2.02; artificial stone pavement, class A, \$1.45; Colorado stone curb, class No. 2, 85 cts. per lin. ft.; Kettle River stone curb, class No. 2, 84 cts.; artificial stone combined curb and gutter, class A, 55 cts.; artificial stone curb, class No. 2, 46 cts. Street Improvement District No. 1498, 39th St. from Dewey Ave. to north line of Jackson St., east: Asphalt pavement, class B, \$2.25 per sq. yd.; asphaltic concrete pavement, class A, \$2.05; brick block pavement, class B, \$2.15; vertical fiber brick pavement, class A, \$2.02; artificial stone pavement, class A, \$1.67; artificial stone combined curb and gutter, class A, 64 cts. per lin. ft. Street Improvement District No. 1499, Hickory St. from 32d Ave. to 36th St.: Asphalt pavement, class B, \$1.82 per sq. yd.; asphaltic concrete pavement, class A, \$1.62; brick block pavement, class B, \$2.15; vertical fiber brick pavement, class A, \$2.07; artificial stone pavement, class A, \$1.48; Colorado stone curb, class No. 2, 85 cts. per lin. ft.; Kettle River stone curb, class No. 2, 85 cts.; artificial stone combined curb and gutter, class A, 52 cts.; artificial stone curb, class No. 1, 49 cts.; artificial stone curb, class No. 2, 46 cts. Thirty days have been given for property owners to designate material wanted. Bidders were: Chas. Fanning, Bee Bldg., Omaha; Hugh Murphy, Bee Bldg., Omaha; H. J. Cathroe, Ware Bldg., Omaha; Commercial Land Co., Karbach Bldg., Omaha; John A. Beebe, 1711 Sallier St., Omaha; Samuel Friedman, State Bank Bldg., Omaha; G. Mancini, Florence, Neb.; Noble & Grasso, 1244 S. 14th St., Omaha; Offerman Const. Co., South Omaha, Neb. Thomas J. Flynn is City Clerk.

South Omaha, Neb.—Paving and curbing bonds in sum of \$19,000 have been filed with State Auditor Smith for registration by authorities of city of South Omaha.

Bayonne, N. J.—Property owners on W. 39th St. have petitioned city fathers to pave their street with sheet asphalt.

Carlstadt, N. J.—Clerk has been directed to ask for bids for 15,000 sq. yds. of street oiling.

Camden, N. J.—Finance committee of City Council of city of Camden, N. J., will receive sealed proposals at 8 o'clock p. m., June 14, 1915, for purchase of \$50,000 repavement bonds.

Merchantville, N. J.—Six contractors were represented in opening of bids for application of asphalt or tarvia to 20,000 sq. ft. of most used of new streets at Merchantville at meeting of Borough Council. Four styles of covering were bid on, known as Trinidad "A," Trinidad "B," Tarvia "A" and Tarvia "B." Walter S. French, of Moorestown, was the lowest in all except the third class, the Tarvia "A," in which he was underbid \$17.50 by the Main Line Stone Co., of Philadelphia. Mr. French's figures were, respectively, \$1,957.50, \$1,006.55, \$2,017.50 and \$1,039.87. The highest bidder, Sutton & Corson, of Ocean City, were more than double Mr. French's estimates in each class, respectively, \$4,195, \$2,239.82, \$4,395 and \$2,339.80. The bids were referred to the department of public works and service.

Passaic, N. J.—Ordinance has been passed for laying an asphalt-bound macadam pavement on Summer St., westerly from Main Ave.

Pleasantville, N. J.—Over 700 names have been signed to petitions to be presented to Atlantic County board of freeholders on their next meeting night asking that Atlantic City-Pleasantville Blvd. be paved.

Albany, N. Y.—Following are 3 lowest proposals received by State Highway Commission at its office, No. 55 Lancaster St., Albany, N. Y., for construction of highways by State Aid on Friday, June 4, 1915: Road No. 1279, Dunnsville-Altamont, Albany County, 3.41 miles: 1—The Curran Corp., Middletown, Conn., \$27,851.50; 2—Alonso Schupp, Guilderland, N. Y., \$28,899.25; 3—Criswell & Mallor, Inc., Mechanicville, N. Y., \$29,234. Road No. 1280, Dormansville-Westerlo-Ford Corners, Albany Co., 5.76 miles: 1—David H. Crawford, Ravena, N. Y., \$56,736.75; 2—C. W. Tryon, Boyntonville, N. Y., \$57,858.75; 3—Geo. H. McAvoy, Creek Locks, N. Y., \$58,464. Road No. 5555, Loudon-Crescent, Albany Co., 4.20 miles: 1—Thos. H. Karr, Troy, N. Y., \$47,414.25; 2—Brown & Lowe, Schenectady, N. Y., \$48,225.25; 3—Geo. H. Totty, Cohoes, N. Y., \$49,897.50. Road No. 5259-A, Salamanca-Little Valley, Part 2, Cattaraugus Co., 4.29 miles: 1—James Rooney, Buffalo, N. Y., \$55,934.50; 2—Woolsey Cons. Co., Davenport, Ia., \$57,310; 3—Fred E. Gross & Son, Yonkers, N. Y., \$57,550.50. Road No. 5432-A, Horseheads-Cayuga, Chemung & Schuyler Cos., 8.98 miles: 1—Bord Bros., Elmira, N. Y., \$89,686.90; 2—Peter F. Connolly Co., Horseheads, N. Y., \$96,578.90; 3—Brady-Oltarsch Cons. Co., Inc., New York City, \$98,183.90. Road No. 1285, Westport-Wadhams Mills, Essex Co., 3.31 miles: 1—Bluff Point Stone Co., Plattsburgh, N. Y., \$29,461; 2—John F. Lewis, Albany, N. Y., \$31,836.50; 3—Boynton & McNally, Keeseville, N. Y., \$32,522. Road No. 1286, Gabriels-Bloomingtondale, Pt. 1, Essex Co., 0.52 mile: 1—Rumph & Stevens, Lake Placid, N. Y., \$5,688.50; 2—E. M. Merrill & Paul J. Merrill, Saranac Lake, N. Y., \$5,894.49. Road No. 1227, Redwood-St. Lawrence County Line, Jefferson Co., 4.60 miles: 1—Jas. E. Martin, Utica, N. Y., \$56,474.75; 2—Criswell & Mallory, Inc., Mechanicville, N. Y., \$57,795.40; 3—McNerney Cons. Co., Canton, Pa., \$58,305.20. Road No. 1281, West Greece-Manitou Beach, Monroe Co., 8.39 miles: 1—P. H. Murray, Rochester, N. Y., \$73,891.50; 2—Ribstine-Holter Co., Inc., Rochester, N. Y., \$74,792; 3—McNerney Cons. Co., Canton, Pa., \$76,931. Road No. 1282, Morton-Redman Road, Monroe Co., 1.51 miles: 1—Morrison & Quinn, Inc., Rochester, N. Y., \$17,852.16; 2—Goodrich & Truesdale, Barnard, N. Y., \$17,912.45; 3—Michael O'Brien, Cortland, N. Y., \$17,986.50. Road No. 1159, Vienna-New London, Oneida Co., 7.76 miles: 1—H. B. Sproul Cons. Co., Peekskill, N. Y., \$82,944; 2—John H. Gordon, Albany, N. Y., \$83,992.50; 3—Jas. Anderson, Menands, N. Y., \$84,998. Road No. 5328-B, West Point-Central Valley, Orange Co., 6.27 miles: 1—Schunnefunk Cons. Co., Highland Mills, N. Y., \$73,445.50; 2—John L. Hayes Cons. Co., Yonkers, N. Y., \$74,039.20; 3—Fred E. Gross & Son, Yonkers, N. Y., \$75,506.80. Road No. 580, Fancher-Brockville Orleans Co., 2.87 miles: 1—Thomas Holahan, Rochester, N. Y., \$39,878.30; 2—

Rhody & Clawson, Albion, N. Y., \$42,069; 3—McNerney Cons. Co., Canton, Pa., \$42,148.90. Road No. 581, Yates-Lyndonville-Ridgeway, Orleans Co., 7.46 miles: 1—Michael Murphy, Rochester, N. Y., \$65,035.50; 2—McNerney Cons. Co., Canton, Pa., \$77,267; 3—Westchester-Dutchess Corp., Mt. Vernon, N. Y., \$79,601. Road No. 5556, Ridgeway-Gaines, Part 1, Orleans Co., 0.17 mile: 1—Rhody & Clawson, Albion, N. Y., \$2,948; 2—Arlington Cons. Co., Rochester, N. Y., \$3,010. Road No. 1287, Pulaski-Williamstown, Part 3, Oswego Co., 7.75 miles: 1—Brown & Lowe Co., Schenectady, N. Y., \$62,846.50; 2—F. A. Biggi, Brooklyn, N. Y., \$63,989; 3—P. H. Murray, Rochester, N. Y., \$64,621. Road No. 1288, Pulaski-Williamstown, Part 1, Oswego Co., 5.12 miles: 1—Brown & Lowe Co., Schenectady, N. Y., \$37,343.50; 2—P. H. Murray, Rochester, N. Y., \$41,722; 3—Thos. Grady, Rochester, N. Y., \$43,438.80. Road No. 1261, Massena-Helena, Part 1, St. Lawrence Co., 5.06 miles: 1—Ross-Hallenbeck Cons. Co., Copenhagen, N. Y., \$68,770.30; 2—McNerney Cons. Co., Canton, N. Y., \$70,749.10; 3—Henry P. Burgard, Buffalo, N. Y., \$71,277. Road No. 5474-A, Cayuga-Newfield, Schuyler & Tompkins Cos., 7.60 miles: 1—Hendrickson-McCabe Cons. Co., Spencerport, N. Y., \$54,261.40; 2—Brady-Oltarsch Cons. Co., Inc., New York City, \$58,059.50; 3—Albert Gaffney, Syracuse, N. Y., \$61,705.

Following are 3 lowest proposals received by the State Highway Commission at its office, No. 55 Lancaster St., Albany, N. Y., for the repair of the following highways by State Aid on Friday, June 4, 1915: Rep. Con. No. 781, Road No. 22, Loudon, Albany Co., 0.53 mile: 1—George Holler, Albany, N. Y., \$3,780.50; 2—Thos. H. Karr, Troy, N. Y., \$2,014. Rep. Con. No. 785, Road No. 192, Beaver Dam, Road No. 198, Delaware, Part 4, Road No. 566n, Wolf Hill-Berne, Albany Co., 11.22 miles: 1—John W. Flynn, Waterford, N. Y., \$36,495.95; 2—W. L. Lawton, Glens Falls, N. Y., \$39,598.60; 3—Brown & Lowe Co., Schenectady, N. Y., \$39,903.45. Rep. Con. No. 726, Road No. 135, Violet Ave., Road No. 453, Poughkeepsie-Hyde Park, Road No. 552, Rhinebeck-Elizaville, Dutchess Co., 12.88 miles: 1—Thos. J. Martin, Beacon, N. Y., \$9,708.50; 2—Conway Bros & Kennedy, Eddyville, N. Y., \$10,132; 3—Wm. Doyle, Saugerties, N. Y., \$10,154.50. Rep. Con. No. 701, Road No. 653, Granby Roads, Oswego Co., 3.09 miles: 1—DeBarber & Hill, Fulton, N. Y., \$9,568.36; 2—Pathfinder Cons. Corp., Fulton, N. Y., \$9,790.75; 3—J. H. Weidman, Syracuse, N. Y., \$10,575.18. Rep. Con. No. 774, Road No. 490, Hoosick-No. Hoosick, Rensselaer Co., 1.43 miles: 1—Wm. L. Sherrill, Hudson Falls, N. Y., \$9,999.65; 2—Thos. H. Karr, Troy, N. Y., \$10,704.50; 3—Kingsbury Cons. Co., Hudson Falls, N. Y., \$10,738. Rep. Con. No. 600, Road No. 1, Troy-Schenectady, Pt. 1, Road No. 407, Troy-Schenectady, Pt. 2, Schenectady Co., 3.94 mi.: 1—Brown & Lowe Co., Schenectady, N. Y., \$26,417.40; 2—Wm. L. Sherrill, Hudson Falls, N. Y., \$28,298; 3—John P. Dugan & Co., Amsterdam, N. Y., \$30,434.

Following are 2 lowest proposals received by State Commission of Highways at its office, No. 55 Lancaster St., Albany, N. Y., for the furnishing of the following quantities of broken stone, on Friday, June 4, 1915: Broken Stone Contract No. 58, Niagara Co., 37.98 miles, 1,400 tons: 1—Wm. D. Dickinson, Lockport, N. Y., \$2,508; 2—John W. Landel, Tonawanda, N. Y., \$2,512. Broken Stone Contract No. 49, Seneca Co., 17.32 miles, 355 tons: 1—Richard Hopkins, Troy, N. Y., \$752.60; 2—Clarence E. Walker, Troy, N. Y., \$798.75. Broken Stone Contract No. 47, Wayne Co., 12.49 miles, 605 tons: 1—Richard Hopkins, Troy, N. Y., \$1,479.50; 2—Fred D. Dutcher, Fulton, N. Y., \$1,507.10.

Auburn, N. Y.—Proposition to pave Seneca St., Weedsport, from strip laid by state to curb on each side has been carried by special election held in village by vote of 190 to 20. Action calls for an appropriation of \$15,600.

Boonville, N. Y.—Special election held to vote on proposition of paving Schuyler St. from village square to depot resulted in victory for brick pavement by vote of 11 majority.

Dobson Tp., N. C. (P. O. Dobson).—An election will be held June 8 to vote on the question of issuing 6% road bonds to the amount of \$30,000.

East Syracuse, N. Y.—East Syracuse will have three more improved highways this summer, according to announcement by village board of trustees. The state highway department has

stated that West Manlius St. would be paved from intersection of Clarke St. westward to the village line. The cost will be \$7,800, to be jointly met by village and New York State railways. Sealed proposals will be received for building curb and gutter in McCool Ave., a distance of 1,850 ft., from East Yates St. to Irving St., and Silver St. will also be macadamized.

Long Island City, L. I.—A second party of engineers who are making survey of Rockaway Blvd., which will connect Woodhaven with Rockaways will start work next week.

Long Hill Tp., N. C. (P. O. Dobson).—An election will be held June 5 to vote on the question of issuing 5% road bonds to the amount of \$10,000.

Niagara Falls, N. Y.—The assessors have reported to Board that Bessemer brick had been selected for new pavement in North Main St. to Bellevue Ave. McKinney & McGuire are the low bidders.

Niagara Falls, N. Y.—City Engineer Parkhurst has asked board of public works for \$7,000 additional for maintenance of paving repair plant this summer. This amount is also intended to cover cost of oiling several streets approved of by Board.

Watertown, N. Y.—Six bids for paving of Mill St. and three for paving of Washington St., together with bids on curbing, have been received at meeting of Board of Public Works. City Engineer E. W. Sayles will go over bids, computing cost and ascertaining which is cheaper. Burns Brother and Haley of this city were low bidders on Mill St. pavement, but for curbing of same street, A. F. Nims of Philadelphia was low bidder. Lou B. Cleveland was low man on pavement for Washington St., but for curbing in same street others offered the same figures. Following are bids on pavement and curbing omitting other minor parts of the work: On Mill St., A. F. Nims, Philadelphia, \$1.49 a sq. yd. and 22 cts. for the curbing; William F. Cogley, Utica, \$1.35 a sq. yd. and 34 cts. for the curbing; William T. Field, city, \$1.35 a sq. yd. and 42 cts. for the curbing; Burns Brothers and Haley, city, \$1.25 a sq. yd. and 35 cts. for the curbing; Lou B. Cleveland, \$1.51 a sq. yd. and 24 cts. for the curbing; Gooley and Allard, city, \$1.51 a sq. yd. and 25 cts. for the curbing. For the Washington St. work they were as follows: William F. Cogley, Utica, \$1.35 a sq. yd.; Burns Brothers and Haley, city, \$1.25 a sq. yd.; Lou B. Cleveland, city, \$1 a sq. yd. The prices of all three on the curbing were the same, 65 cts.

Watertown, N. Y.—At short meeting of board of public works contract for paving Mill St. was let to Burns Bros. & Haley, and Washington St. pavement to Lou B. Cleveland.

Elkin, N. C.—The highway commission of Elkin Township has sold \$35,000 of good road bonds to C. W. Malone & Co., of Asheville.

Columbus, O.—Service Director Borden has received bids for repaving of East Broad St., from High to Third Sts. Contract will be awarded in a day or so. Among the bidders was the Cleveland Trinidad Asphalt Co., which is completing repaving of High St.

Columbus, O.—County Commissioners have sold \$21,500 worth of road improvement bonds to Ohio National Bank. Bonds are for improvement of extension of South Parsons Ave., south of the city.

Columbus, O.—Bids will be received by County Commissioners until 10 a. m., June 25, for purchase of bonds in sum of \$35,000 for improvement of county road. John Scott is Clerk of Board.

Malvern, O.—Bids will be received on June 29 for the improvement of Reed Ave., Porter and Main Sts., with brick, 29,650 sq. yds. on natural gravel foundation, cement grout filler, 13,740 ft. concrete or stone curb, 745 ft. circular curb, 1,520 headers, 48 catch basins, 2,570 ft. 12-in. sewers. J. G. Murdson is Clerk. L. D. S. Klotz is Mayor.

Milan, O.—Bond issue of \$30,000 for good roads has been carried.

New Philadelphia, O.—The Ohio National Bank, Columbus, has been awarded \$53,198 of paving bonds at \$361.21 premium, and Fifth-Third National Bank of Cincinnati was awarded another issue of \$5,400 paving bonds at \$54 premium.

Salem, O.—Total estimated cost of paving East Main St. from Depot St. to Lincoln Ave. is \$13,533.60, 50 per cent. of which cost would be carried by city. Per foot front it would mean \$2.44.

Tiffin, O.—Bids will be received at the office of the auditor of city of Tiffin,

State of Ohio, until 12 o'clock, the 5th day of July, 1915, for purchase of bonds in the aggregate sum of \$64,500 for paving of West Davis, Wentz, Coe and East Market Sts. A. J. Hadley is city auditor.

Wellington, O.—The National Bank of Elyria, O., has been awarded the \$12,000 Penfield Township road bonds.

Tulsa, Okla.—See "Miscellaneous."

Astoria, Ore.—Finance committee of county advisory board is meeting with splendid success in its campaign to secure funds to add to \$35,000 appropriated by state for highway in Saltcop County.

Portland, Ore.—Maintenance and construction of Multnomah county's 73 miles of hard surfaced roads will be handled under separate contracts. Printed specifications for work will be submitted for approval to Commissioners and first advertisement for bids will be issued at once.

Erie, Pa.—Frank E. Pelow, superintendent of public property, has been authorized to advertise for bids to improve Wayne park, 6th St. and East Ave.

Johnstown, Pa.—Ordinance has been passed providing for curbing, grading and paving of Cypress Ave. in the 17th Ward of the city of Johnstown, from Wheat St. to Bond St., and providing for payment of same.

Johnstown, Pa.—Bids submitted by 14 firms, on street improvement work mapped out for this summer, were read and ordered tabulated. The Central Construction Co. bid on excavating was 45 cts. per yd., and \$1.90 for asphaltic cement filler. The excavating averages 12 ins. or less, so that \$2.05 per yd. will be the approximate price for the asphalt work in event that company lands the contract. Contracts soon to be let are: Park Pl., resurfacing; Dibert St., asphalt; Napoleon St., resurfacing; Somerset St., resurfacing; Bausman Alley, resurfacing; Park Ave., brick; Power St., asphalt; Grant St., brick; Seigh Alley, brick; Southmont Ave., brick; Cypress Ave., brick; Cypress Ave., Sam's Run to Wheat, brick; Ohio St. to Sam's Run, asphalt; Coleman Ave., asphalt; Central Ave., brick; Linton St., brick.

Wesleyville, Pa.—By vote of 92 to 14, citizens of Wesleyville have voted for bond issue of \$8,000 to be used in paving Buffalo Rd. from Orchard Ave. to Four-Mile creek, a distance of 2,700 ft.

Williamsport, Pa.—Councilman J. A. L. Minor, superintendent of highways, has introduced ordinance for purchase of motor street sweeper and flusher in session of City Council. The bill which was later approved in committee of whole and then passed on first reading, carries appropriation of \$3,000.

Greenville, S. C.—The Greenville Highway Commission has selected P. F. Patton of Hendersonville, N. C., as supervising engineer for road work which will be done in this county as result of \$950,000 bond issue.

Greenwood, S. C.—Petition asking for election on bond issue of \$100,000 for street improvements is being circulated.

Sumter, S. C.—Petition is being circulated asking for election to decide issue of \$225,000 bonds for paving streets and sidewalks.

Bristol, Tenn.—On their final reading Board of Mayor and Commissioners have passed two ordinances authorizing issuance of \$13,500 worth of property owners and city bonds to pay for construction of concrete streets in Holston Heights Improvement District.

Chattanooga, Tenn.—Five bids were submitted to Wauhatchie pike commission for construction of road for which legislature authorized a \$125,000 bond issue. Bids were turned over to the county engineer.

Columbia, Tenn.—Under provisions of Chapter 26 of the acts of 1915, bill authorizing bond issue of \$200,000 for good roads in Maury County, it will be necessary for 100 citizens or taxpayers of the county to petition the county election board to hold the election.

Johnson City, Tenn.—J. H. Pritchard and others of Elk Park, N. C., have filed bill seeking to enjoin issuance of \$150,000 in bonds to build roads in Avery County, North Carolina.

Middlesboro, Tenn.—The Bell County Fiscal Court has purchased second portable steam shovel for use on new roads.

Tazewell, Tenn.—The \$372,000 bond issue of Claiborne County is being advertised for sale on June 8, by County Judge J. H. S. Morrison, of Cumberland Gap. Proceeds will be used to build modern roads all over county, including section of Dixie highway.

Corpus Christi, Tex.—Paving bonds in sum of \$100,000 will probably be sold to Powell, Gerard & Co., of Chicago.

Corpus Christi, Tex.—Following are four bids received for about 86,000 sq. yds. of paving: Texas Bitulithic Co., bitulithic on concrete, \$2.48 per sq. yd.; Eureka Paving Co., asphalt on concrete, \$2.18 per sq. yd.; Vibrolithic Paving Co., concrete, bituminous top, \$1.93 per sq. yd.; Uvalde Rock Asphalt Co., asphalt on concrete, \$2.04 per sq. yd. Contract will be awarded in a few days.

Marshall, Tex.—County commissioners have just closed contract for about 60,000 cu. yds. of gravel to be used on good roads in this county. Pit is located on Texas & Pacific Railway west of Texarkana and gravel will be delivered on track for \$1.07 a yd.

Terrell, Tex.—The commissioners' court, in session at Kaufman, has accepted bid of three banks of Terrell on \$300,000 road bonds of this district.

Ogden, Utah.—On report of Washington Jenkins, city engineer, that plans and specifications for paving Madison Ave. with asphalt, from 25th St. to 28th St., were completed. City commissioners have authorized him to advertise for bids. Specifications call for 2-in. layer of asphalt upon 6-in. concrete foundation. Present indications are that this street will be only one paved this season. Engineer also was authorized to ask for bids for laying sidewalks in Lafayette Ave., between 26th and 27th Sts.

Salt Lake City, Utah.—Bids will be called for 4 paving and 3 sidewalk extensions as follows: Paving No. 117, Apricot St., \$1,764.19; No. 108, B St., \$25,502.14; No. 106, Sixth East, \$46,175.12; No. 113, Fourth West, \$13,859.22; Sidewalks, No. 177, A St., \$5,005.12; No. 178, Rosella Ave., \$1,926.82; No. 176, Blaine Ave., \$2,054.58.

Salt Lake City, Utah.—A plan to issue 20-year road bonds in Utah County for construction of 40 miles of concrete road extending north and south through county will be placed before taxpayers of county within near future. Plan sets forth raising of \$500,000, said Richard R. Lyman of State Road Commission, and it has been estimated by Commissioners and road officials that this step will be less expensive than present system for maintenance and upkeep of roads. Proposed concrete road will run from Lehi to Santaquin and south from Santaquin to the Juab County line and will pass through Lehi, American Fork, Pleasant Grove, Provo, Springville, Spanish Fork, Salem and Payson. It is estimated the work can be done for \$500,000, or little more than \$12,000 a mile. It is plan of county officials and officials of cities of county to present proposition to people to determine whether special election to issue bonds shall be called.

Fairmont, W. Va.—Special election will be held June 21 to vote on question of issuing road bonds in sum of \$100,000.

Cathlamet, Wash.—Whakium County has \$75,000 in the treasury and \$12,000 more promised by state for construction of highway through this county, and preliminary steps have been taken toward securing such a road.

Edmonds, Wash.—Proposed Edmonds-Richmond Beach Rd. will be built and work is to begin at once, is decision of County Commissioners Fleming and Quast.

Everett, Wash.—City will shortly place on market issue of Everett Ave. improvement bonds in sum of \$30,000.

Seattle, Wash.—A report and estimate of cost of improving Fifth Ave. North, Aloha St. and Taylor Ave. by paving, etc., has been submitted to the Board of Public Works by city engineer and laid on table for one week for further consideration. The estimated cost is placed at \$27,145.93.

Seattle, Wash.—Plans have been received for paving East and West Green Lake Way, estimated cost \$110,000; grading Eloise Terrace, cost \$8,000; grading 35th Ave. South, cost \$3,500; paving Mill St., cost \$12,000.

Tacoma, Wash.—A large sidewalk improvement has been ordered by city council for Old Tacoma district. Estimated cost is \$15,844, and about 35 blocks of cement sidewalks will be laid. Commissioner of Public Works Owen Woods was instructed to call for bids soon.

Milwaukee, Wis.—Street improvement work to cost \$150,000 has been planned.

New London, Wis.—All bids received for 14,000 sq. yds. pavement have been rejected.

Niagara Falls, Ont.—The Stamford

council at special meeting has decided to pave Lundy's Lane from Main St. 1 1/4 miles west with Roc Mac macadam. At same time it was decided to extend concrete pavement in Portage Rd. half a mile north. The aggregate cost of both pavements will be about \$28,000. Work will be started on both jobs in a few weeks.

CONTRACTS AWARDED.

Tuscaloosa, Ala.—The Tuscaloosa Concrete Co. has been awarded contract for building portions of Huntsville and Byler Roads, amounting to \$17,000, by State Highway Engineer W. S. Keller and board of public works. There were 19 bids received. The work of constructing these roads will begin immediately.

California.—Following bids were opened May 24 by State Highway Comm., Sacramento, for highway improvements: Los Angeles County, Div. 7, Route 4, Sect. A: Lowest bidder: Homer R. Kennedy & Frank Williams, Los Angeles, as follows: 12,200 cu. yds. excav. (ordinary), 40 cts.; 102 lin. ft. 18-in. cor. i. pipe, 50 cts.; 74 lin. ft. 24-in., 75 cts.; 10 lin. ft. 36-in., \$1; 95 cu. yds. cement concrete, Class B (culverts and monuments), \$10; 4,120 cu. yds. cement concrete, Class B pavt., \$3.49; 1,756 lin. ft. guard rail, 40 cts.; 73 monuments to haul and set, ea., \$1; total, \$21,101. Next 3 lowest bids: W. A. Dontanville, Paso Robles, \$23,918; Geo. Wiegand, Lamanda Park, \$24,280; John D. Marash, Bakersfield, \$25,552. Engineer's estimate, \$26,894. Kings County, Div. 6, Route 10, Sect. A: Lowest bidders: Geo. S. Benson & Sons, Los Angeles, as follows: 25,000 cu. yds. excav. (ordinary), 65 cts.; 5,000 cu. yds. excav. (borrow), 80 cts.; 530 lin. ft. 12-in. cor. i. pipe, 75 cts.; 488 lin. ft. 18-in., 80 cts.; 60 lin. ft. 24-in., 90 cts.; 30 lin. ft. 30-in., \$1; 200 cu. yds. cement concrete, Class B (culverts and monuments), \$10; 8,760 cu. yds. cement concrete, Class B (pavt.), \$3; 1,170 lin. ft. guard rail, 60 cts.; 54 monuments to haul and set, ea., \$2; total, \$50,212. Next 3 lowest bids: John D. Marash, Bakersfield, \$51,697; W. A. Dontanville, Paso Robles, \$54,955; Taylor & Berliner, Los Angeles, \$56,809. Engineer's estimate, \$51,262. Tehama County, Div. 2, Route 3, Sect. C: Lowest bidder: H. H. Harlan & T. W. Harlan, Williams, as follows: 83,400 cu. yds. excav. (without classification), 46 1/4 cts.; 2,268 lin. ft. 12-in. cor. i. pipe, 40 cts.; 670 lin. ft. 18-in., 50 cts.; 283 lin. ft. 24-in., 75 cts.; 700 cu. yds. cement concrete, Class B (culverts, monuments and slope pav.), \$11.64; 120 cu. yds. cement concrete, Class C (retaining walls), \$12.15; 236 monuments to haul and set, ea., \$1.50; total, \$49,991. Next 3 lowest bids: Jas. Fitzpatrick, Sacramento, \$50,206; Hoffman & McLaren, Oakland, \$51,733; Eaton & Smith, San Francisco, \$54,987. Engineer's estimate, \$43,559. Tehama County, Div. 2, Route 3, Sect. B: Lowest bidder: Hoffman & McLaren, Oakland, as follows: 23,650 cu. yds. excav. (without classification), 60 cts.; 130 lin. ft. 12-in. cor. i. pipe, 40 cts.; 100 lin. ft. 18-in., 60 cts.; 170 cu. yds. cement concrete Class B (culverts, monuments and slope pav.), \$9; 6,320 cu. yds. cement concrete Class B (pavt.), \$4.25; 3,700 lin. ft. guard rail, 25 cts.; 40 monuments to haul and set, ea., \$1; total, \$43,657. Next 3 lowest bids: Commary Peterson Co., San Francisco, \$44,662; Jas. Fitzpatrick, Sacramento, \$45,914; L. F. Gerdtz, San Francisco, \$46,040. Engineer's estimate, \$43,278.

Los Angeles, Cal.—For improving Manhattan Pl. from Third St. to Wilshire Blvd., to George R. Curtis, 552 South St. Louis St., at \$20,190.

Pasadena, Cal.—With three bidders closely bunched, Andrew Holloway was awarded contract for paving, sidewalking, grading, curbing and guttering of Wilson Ave. His bid was \$15,085.72, while T. C. Breitenstein bid \$15,624.75 and M. W. McCombs bid \$15,838.90.

Santa Cruz, Cal.—Board of Supervisors has let contract for Bloom grade road into State Redwood Park. The bids were: A. G. Pryor, \$5,950; Eastman & Trout, \$5,175; W. J. McReynolds, of San Jose, \$4,795. Contract was let to McReynolds. Road is by way of old Bloom mill and is extension to new state road from Saratoga summit.

Watertown, Conn.—Bids for paving of Canal St. have been opened by board of works and contract awarded to Altieri Bros. for sum of \$6,816.70.

Pueblo, Colo.—C. B. Sherwood of this city has been awarded contract for graveling Main St. from Rocky Ford canal to fair grounds by City Council. Contract calls for 7 1/2 ins. of gravel in

center of street and 3½ ins. at curb, to be rolled to a perfect bed.

Pueblo, Colo.—Contract for curbing Abriendo Ave. along parkways has been let by City Commissioners to H. Everett at price of 23½ cts. per lin. ft. There are 11,700 ft. to be laid.

Jacksonville, Fla.—Commissioner of Public Works, L. D. Smoot and Bond Trustee Gustav Muller have announced that they have decided to purchase street cleaning machine from Elgin Street Sweeper Co., of Elgin, Ill. Matter was referred to these two officials with power to act at last meeting of committee on public works. The price of the machine is \$4,275. It will cost about \$4,500 laid down in Jacksonville.

Edwardsville, Ill.—First road to be built in St. Clair County under state aid system will be 2 miles long, extending from city limits of East St. Louis on Collinsville highway. Contract was let at Springfield to H. H. Hall Construction Co., of East St. Louis, on a bid to do work at \$16,900 a mile. Next nearest of the 14 bids was \$17,333 a mile.

Indianapolis, Ind.—A contract for paving Parkway Blvd. from 18th to 13th Sts. has been awarded to American Construction Co. by board of public works. Boulevard is to be paved with bituminous concrete, using first grade asphalt and contract price is \$3.20 a lin. ft. on each side of street and \$25,000 for street and alley intersections.

La Porte, Ind.—A favorable bid on oiling of Monroe St. from Jefferson Ave. to South Ave. has been received. The lowest is Benjamin Gross' bid of 3.9 cts. a sq. yd. for two applications, which it is estimated, is about 4 cts. per ft. front. The price for job at this figure is \$650. Next lowest bid was that of A. G. Tamlin, 4.65 cts. per sq. yd. All other bids were above estimate and could not be considered.

Richmond, Ind.—Contracts for three permanent street improvements have been awarded by Board of Public Works. Harding, Slattery & Buchanan of Crawfordsville received contract for placing cement paving on 6th St. from South A St. to Fort Wayne Ave. F. E. Klick was awarded contract for placing brick paving on North 5th St. from Main St. to North A. Cronin & Meredith received contract for paving of South A St. from 5th St. to 16th St.

Richmond, Ind.—Big contract has been landed by Andrews Asphalt Paving Co. of Hamilton, O. Concern has just taken contract to pave ten blocks of North A St., in Richmond, Ind. It is estimated the work will cost \$36,000. Contract price is \$1.80 a sq. yd. for Trinidad asphalt, laid according to specifications of Richmond city engineer.

South Bend, Ind.—Contract for asphalt paving Vassar Ave. has been awarded to Western Construction Co. Work will cost \$2,476.05.

West Baden, Ind.—The L. R. Figg Co., of Louisville, has closed contract with West Baden Springs Co. for boulevard leading to their new golf links. Contract price is \$40,000.

Dubuque, Ia.—One of the latest model scarifiers, weighing 6,400 pounds, has been purchased by city at special meeting of city council at cost of \$450. The scarifier is a machine used to tear up old macadam and other pavements. The prongs are 32 ins. long and are reversible. The machine was purchased from the Austin-Western Co., of Chicago, through Mr. Knox, the Iowa representative. The machine will be hitched onto the steam roller when put into use.

West Liberty, Ia.—The C. B. McNamara Contracting Co., of Dubuque, is successful bidder on new streets that are to be put in there this summer. Mr. McNamara has secured contracts to amount of \$100,000.

Pittsburg, Kan.—To T. L. Green contract for building concrete culvert on South Broadway.

Louisville, Ky.—Contract for construction of Franck Ave., from Frankfort to 935 South Payne, a distance of four blocks, and English Ave., from Hillcrest to Crescent, have been awarded by board of public works to American Standard Asphalt Co. Franck Ave. will be paved with asphalt at cost of \$13,500, and English with bituminous concrete at price of \$5,060.

Portland, Me.—Section of State highway between Portland and Dunstan is to be constructed of concrete. Contract has been let to the Hassam Paving Co., of Worcester, Mass., for \$69,454.36. Contract has also been let for 2.5 miles of

gravel road through town of Searsport on State highway between Rockland and Bangor. This was awarded to Manzie I. Rogers of Bangor.

Baltimore, Md.—Lowest bid received for 25,000 sq. yds. sheet asphalt was that of P. Flanigan & Sons as follows: To lay 25,000 sq. yds. of sheet asphalt on Lombard St., from Exeter to Washington, and Washington St., from Aliceanna to Fayette, for \$1.16½ net, the bid being \$1.39 a sq. yd., with a proposal to give the city 22½ cts. a sq. yd. for the old cobblestones.

Baltimore, Md.—The paving commission has recommended that contract for paving Block, Philpot and several other streets in Southeast Baltimore with granite blocks to be given to Smith & Co., of Richmond.

Ann Arbor, Mich.—For construction of 19,000 sq. yds. asphaltic concrete and 7,200 cu. yds. gravel excavation, lowest bidder was Good Roads Const. Co., Chicago, Ill., at \$31,170.

Duluth, Minn.—Rogers & McLean are low bidders on paving Kenilworth Ave. from Vermilion Rd. to Livingston Ave., and Sussex Ave. from Snively Rd. to Kenilworth Ave. Bid was \$8,982.45. The other bids follow: George R. King, \$9,409.30; J. D. O'Connell, \$9,047.95, and August Bodin & Son, \$10,765.40. The streets will be paved with concrete.

St. Paul, Minn.—Council has approved action of city purchasing committee in awarding contracts for materials for the paving of several streets, as follows: John Mulligan, 465 cu. yds. of concrete sand at 68 cts. cu. yd., for Robert St.; C. Bielenberg, 1,077 yds. of crushed rock at \$1.20, for Fairfield Ave.; North Land Pine Co., 1,894 ft. of lumber at \$35.45, for Fairfield Ave.; W. H. Malone, 3,148 yds. of concrete sand at 78 cts. a yd., for Marshall Ave., and 1,646 yds. of screened sand at 88 cts., for Marshall Ave.; C. Bielenberg, 767 yds. of crushed rock for Robert St. at \$1.20 yd.; J. L. Shieley, 4,643 yds. of gravel for Marshall Ave. at \$1.62; R. C. Jefferson Lumber Co., 3,227 ft. of lumber at \$80.50, for Marshall Ave.; J. L. Shieley, 732 cu. yds. of sand for Fairfield Ave. at 85 cts.; St. Paul Lime & Cement Co., 867 ft. of 12-in. pipe for Marshall Ave. at 28 cts. a ft. and 48 sewer bends for Marshall Ave. at 36 cts. each; Purinton Brick Co., 6,489 sq. yds. of paving brick for Marshall Ave. at \$1.06 sq. yd.; Capital City Lime & Cement Co., 8,920 sewer brick for Marshall Ave. at \$10.50 a thousand.

St. Paul, Minn.—By City Council to L. A. Baumgardner Co., at \$3,000, for grading Brauston St.

Chillicothe, Mo.—Council has awarded contract for paving of South Washington St. from Clay to the Wabash right-of-way to C. A. Stewart, who was lowest bidder on that street, North Washington St. and East Bryan were awarded to John F. Meek, he being lowest bidder. E. M. Baker was awarded contract for construction of sidewalks in Third sidewalk district. His bid was finished sidewalk, \$1.25 per sq. yd.; grading, 25 cts. cu. yd. and parking, 25 cts. cu. yd.

Chillicothe, Mo.—C. A. Stewart, of Chillicothe, is lowest bidder for Washington St., from Calhoun to Polk, and Bryan St., from Fair St. to Edgewood Ave. Bids were as follows: Henry Reece, Quincy, Ill., Bryan St.—grading, \$240; curbing, \$513; paving, \$4,475.85; oak headers, \$15; total, \$5,243.85. South Washington St.—grading, \$660; curbing, \$1,193.40; paving, \$13,315; oak headers, \$15; total, \$15,219.40. North Washington St.—grading, \$432; curbing, \$526.50; paving, \$5,278.80; oak headers, \$3; total, \$6,240.30. G. W. Barkwell, Columbia: Bryan St.—grading, \$240; curbing, \$532; paving, \$4,532.15; oak headers, \$20; total, \$5,324.15. South Washington St.—grading, \$660; curbing, \$1,193.40; paving, \$13,511.55; oak headers, \$20; total, \$15,384.95. North Washington St.—grading, \$432; curbing, \$526.50; paving, \$5,308.68; oak headers, \$4; total, \$6,271.18. J. F. Meek, Chillicothe: Bryan St.—grading, \$250; curbing, \$570; paving, \$4,391.40; oak headers, \$20; total, \$5,231.40. South Washington St.—grading, \$687.50; curbing, \$1,326; paving, \$13,182; oak headers, \$20; total, \$15,215.50. North Washington St.—grading, \$450; curbing, \$585; paving, \$5,023.20; oak header, \$4; total, \$6,062.20. C. A. Stewart, Chillicothe: Bryan St.—grading, \$250; curbing, \$532; paving, \$4,504; oak headers, \$15; total, \$5,301. South Washington St.—grading, \$687.50; curbing, \$1,237.60; paving, \$13,266.50; oak headers, \$15; total, \$15,206.60. North Washington—grading, \$450; curbing, \$546; paving, \$5,278.80; oak headers, \$3; total, \$6,277.80. Cameron-Joyce Con. Co., Cedar Rapids, Ia.: Bryan St.—grading, \$250; curbing, \$551; paving, \$4,-

532.15; oak headers, \$19; total, \$5,352.15. South Washington St.—grading, \$687.50; curbing, \$1,281.80; paving, \$13,604.50; oak headers, \$19; total, \$15,592.80. North Washington St.—grading, \$450; curbing, \$565.50; paving, \$5,345.20; oak headers, \$3.80; total, \$6,364.50.

Anaconda, Mont.—City council awarded contract for paving of Main and Park Sts. to Clifton & Applegate, of Spokane, for asphalt-concrete on rock foundation for \$27,609.60, and sewerage contract for \$7,650.15. The Anaconda Copper Mining Co. secured electric lighting contract for \$5,795.29.

Carlstadt, N. J.—By Borough Council for curbing and guttering 11th St. to Charles Figini, of Lodi, N. J., at 60 cts. per lin. ft.

Harrison, N. J.—Harrison town council has awarded contract to pave, with bitulithic, 4th St., from Kearny line to Jackson St. bridge, to Maher & McNichols, whose bid was \$35,170. The other bidders were: Van Keuren & Son, \$36,137; Northern Construction Co., \$35,540; Standard Bitulithic Co., \$37,970; Charles Kavanaugh Co., \$37,956.

Metuchen, N. J.—Contractors McGovern and Sebolt have been awarded contract for building of Metuchen-Perth Amboy Rd., at adjourned meeting of Board of Freeholders. Their bid of \$42,383 was the lowest.

New Brunswick, N. J.—Board of Freeholders of Middlesex County has voted to make Roosevelt road leading from Woodbridge Ave. to Central Railroad tracks in that town a county road. Contract for furnishing and applying asphalt binding to county roads was awarded to Mannerling & Cummings, of Philadelphia. Two supplemental contracts were awarded, one to T. H. Riddle, amounting to \$1,288, for extra work in laying drains on the Highland Park and Metuchen road, and other to Stelle & Schneider for \$835 for extra work on Roosevelt and Woodbridge road.

Trenton, N. J.—For construction of asphaltic concrete pavement to Newton Paving Co., Trenton, N. J., at \$1.41 per sq. yd., or total of \$7,191.

Dunkirk, N. Y.—Mayor and city clerk will enter into contract with Bayerson Oil Works, of Erie, Pa., for oiling East Lake Rd., West Front St., West Lake Rd., Brigham Rd. and Light St., at their quoted price of 5¼ cts. per gallon, applied.

Little Falls, N. Y.—Bids have been opened for city's share of East Monroe St. paving and curbing, beginning at Ann St. Following bids were received: Warren Bros. Com., paving and curbing, \$22,959.07; R. D. Cooper, \$24,320; James Garofano & Son, Inc., \$26,016.45. The contract was let to Warren Bros. Co.

Long Island City, L. I., N. Y.—Bids for highway contracts have been opened in Borough Hall by commissioner of public works. The work to be done and contractors giving lowest bid on each was as follows: Furnishing and delivering one steam asphalt roller as directed in the Borough of Queens, Good Roads Machine Co., \$1,233.33. Regulating, grading the sidewalk spaces and laying sidewalks in Maple St., from Freedom (Union) Ave. to Oxford (Wyckoff) Ave., Fourth Ward; Conrad Kurth, \$392. Laying sidewalks in Franklin St., between Van Alst Ave. and Woolsey St., First Ward; William J. Horie, \$996. Laying sidewalks in 46th St. (National Ave.), from Jackson Ave. to a line 75 ft. north of Fillmore (Prometcha) Ave., Second Ward; William J. Horie, \$1,068. Furnishing and delivering to the bureau of highways 250,000 second-hand granite paving blocks; Borough Asphalt Co., \$4,750. Regulating and repaving with asphaltic concrete pavement on a concrete foundation in 14th St., from Severth to Eighth Ave., and in Eighth Ave., from 14th St. to 13th St., Third Ward; Sicilian Asphalt Paving Co., \$4,893.60. Regulating and repaving with improved granite blocks on a concrete foundation, in Harris Ave., from Crescent St. to Prospect St., First Ward; Queens Plaza Contracting Co., Inc., \$4,919.30. Regulating and repaving with wood block on a concrete foundation, Steinway Ave., from Jackson Ave. to Washington Ave., First Ward; Barber Asphalt Paving Co., \$5,381.15. Regulating and repaving with sheet asphalt pavement on a concrete foundation, in Ralph St., from Brooklyn Borough line to Woodward Ave., Second Ward; Uvalde Paving Co., \$9,518.50.

Schenectady, N. Y.—Contract for several jobs of highway repair work in this county has been awarded to John P. Dugan Co., of Amsterdam, at \$10,754.55. J. J. Malloy, of this city, was

only other bidder, his estimate being \$11,740.87. Contract consists of following pieces of work: Wyatts-Hoffmans, 5.31 miles; Broadway-Fort Hunter, 1.71; Schenectady-Guiderland, 7.10; Schenectady-Rotterdam Junction, 4.76.

Schenectady, N. Y.—Board of Contract and Supply has awarded following contracts: The Union Paving Co. was winner in matter of paving four streets—Hampton Ave., Oakwood Ave., Vermont Ave. and Wright Ave. The Schenectady Contracting Co. secured the remaining two—Ave. B and Robinson St. The Shanley Co.'s bids were all high. The Union Paving Co. bids all fixed three cts. per yard for the guarantee and the prices of paving were quoted as follows: Hampton Ave., \$1.53; Oakwood Ave., \$1.56; Vermont Ave., \$1.56; Ave. B, \$1.59; Wright Ave., \$1.53; Robinson St., \$1.56. The Schenectady Contracting Co. offered the guarantee at one cent per yard except on Oakwood Ave., where a half-cent per yard was the figure. The asphalt prices were as follows: Ave. B, \$1.60; Hampton Ave., \$1.57; Wright Ave., \$1.57; Robinson St., \$1.57; Vermont Ave., \$1.61; Oakwood Ave., \$1.61. The guarantee of the J. F. Shanley Co. was three cents per yard with asphalt on Ave. B at \$1.66; Hampton Ave., \$1.65; Wright Ave., \$1.65; Robinson St., \$1.62; Vermont Ave., \$1.60; Oakwood Ave., \$1.64. The bids on grading of Wagner Ave. were as follows: John Allen excavation, 25 cts., filling 17 cts.; Shear and Wilson, four cents and 20 cents; Charles W. Miller, five cents and 17½ cents; J. W. Kehoe, 1 cent and 26 cents; Kalteaux and DeNallo, 5 cents and 45 cents. The contract was awarded to Charles W. Miller, his being the lowest bid.

Winston-Salem, N. C.—To the Shore Transfer Co. has been awarded contract by Forsyth Highway Commission for construction of about five miles of improved type of soil road between this city and Germantown.

Maddock, N. D.—By village for 16,000 sq. ft. cement sidewalks and 1,200 ft. cement curb to F. M. Haas, Rugby, N. D.

Columbus, O.—Service Director Borden has awarded contracts for street paving, Broad St. from High to Third, was among the number. They are: Buckingham St., Jefferson Ave. to St. Clair, asphalt, A. G. Pugh, \$4,698; Clinton St., Summit to Fourth, Monarch Construction Co., block, \$5,350.40; Como Ave., High to Aldrich, W. M. Graham, block, \$17,641.50; Sixth St., Sycamore to Schiller, block, George Geigle & Sons, \$11,637.75; Armstrong St., Vine to Goodale, block, George Geigle & Son, \$11,687.75; Broad St. High to Third, asphalt, Cleveland Trindid Paving Co., \$14,890.10; 18th St., Long to Mt. Vernon, asphalt, Andrews Asphalt Paving Co., \$9,448.50; East Market St., Monroe Ave. to 17th St., block, George Geigle & Sons, \$1,194; Lexington Ave., Spring to Mt. Vernon, asphalt, Andrews Asphalt Paving Co., \$6,939; Myrtle alley, Avon court to Almond alley, block, Monarch Construction Co., \$2,278.

Summit, O.—For construction of 25,016 sq. yds. brick pavement on concrete foundation, and 48,000 sq. yds. excavation, to Windsor Bros. Construction Co., Akron, O.

Youngstown, O.—The Good Roads Commissioners have opened bids on two road contracts. Work of building the Taylor Corners road in Austintown Township was given to Ross O'Rourke, whose bid of \$1,488.70, was lowest of five submitted. Road is to be 2,900 ft. long and will be surfaced with burnt ore, which is found in neighborhood. Contract for macadamizing McCorkle road, 1.6 miles long, in Jackson Township, was given to Seaborn & Evans for \$7,616.68, their bid being highest of 3 submitted.

Youngstown, O.—Board of control has awarded following street contracts: Japan St. sewer, Charles Harris; Robinson Ave., grading, James Comiskey; August St., grading, Charles Harris; Powersdale Ave., paving, Charles Harris; Blaine Ave., paving, Frank Serafino; East Glenaven Ave., paving, Miller Bros.

Youngstown, O.—By Road District No. 1 for 8,380 sq. yds. limestone macadam to Seaborn & Evans, 1751 Mahony Ave. at \$7,616.68.

Astoria, Ore.—Contracts signed in this city between the Gearhart Park Co. and Worswick Paving Co. will give Gearhart-by-the-Sea over one mile of standard hard surface road, 18 ft. wide. Strip will lay between the Gearhart railway station and Gearhart hotel, giving beach resort finest strip of road in Clatsop county. Work is expected to begin within a week.

Eugene, Ore.—Ole Soleim, of this city, will be awarded contract to do stretch of road work at Bray's point, on road leading up and down coast of Lane county near the Lincoln county line. Cost, \$1,567.42.

Williamsport, Pa.—Councilman Minor has offered resolution in city council awarding to Fred Sanders contract for construction of concrete culvert over proposed extension of W. Fourth St. His bid was \$7.10 a sq. yd. The resolution was passed.

Corpus Christi, Tex.—The Texas Bitulithic Co. has been awarded entire paving contract by City Council, award being for 86,000 sq. yds. of bitulithic paving at \$2.48 per sq. yd. which with curbing and guttering will total approximately \$256,000, city paying one-fourth of cost of paving in front of private property, all of costs for street intersection and property owners paying three-fourths of costs for paving in front of their property.

Dallas, Tex.—Five new city paving contracts have been let by board of city commissioners. This will mean outlay of \$130,000 during the summer. Contracts were awarded on report made by Street Commissioner Otto H. Lang following tabulation of the bids. Levy & Levy, an Oklahoma concern, with offices at Muskogee, secured largest contract. They will pave Bishop Ave. with reinforced concrete. The streets to be improved, company securing the contract, material to be used and total cost of the paving follows: Sycamore, Peak to Fitzhugh—Standard Engineering and Construction Co.; concrete and Uvalde rock asphalt, \$19,114.39. Caddo, Ross to Watt—Standard Engineering Co.; concrete and Uvalde, \$24,457.22. Beelevue, Akard to a Point near Austin—Texas Bitulithic Co., \$22,067.37. Oak Lawn Ave., Lemmon to city limits—bitulithic, \$25,810.80. Bishop, 6th to Zang's Boulevard—Levy & Levy; reinforced concrete, \$38,557.65.

Palmer, Tex.—For constructing one mile of concrete sidewalks, to J. W. Jarrett, Waxahachie.

Richards, Tex.—For constructing gravel roads, to J. G. Browne Co., Houston, at \$50,000.

Chehalis, Wash.—For constructing 1½ miles of concrete road near Curtis, to Jacobson-Bade Co., Portland, at \$15,458.

Everett, Wash.—Contract has been let by county commissioners to Bancroft & Morgan, of this city, at \$7,442.20, for cutting down Whitfield hill on road from Snohomish to Three Lakes, filling some hollows and grading and graveling the resulting roadbed. Job will extend over one mile of thoroughfare and includes three concrete culverts. The other bidders were: Burto Bros., \$7,054.35; Reinseth Bros., \$8,482.80; Ward & Templeton, \$8,539.18, and Standifer & Clarkson Co., \$9,300.

Montesano, Wash.—County Commissioners have let contract for building road between Pacific Beach and Mo-clips, on upland overlooking the beach, to Burnett Construction Co., for \$9,895.

Olympia, Wash.—State highway department has awarded three contracts for highway construction in Eastern Washington, the total amounting to nearly \$72,000. The awards were as follows: 9½ miles of rock and earth grading in Lincoln County, west of Davenport, from Rockland to Creston, to the Mohr Construction Co., of Waterville, at \$41,479.30. Nearly 4 miles in Whitman County, north of Colfax, between Cashup and Steptoe, to the General Construction Co., of Spokane, at \$11,955.75. 5½ miles in Whitman County, south of Colfax, to the H. L. Wilson Co., of Walla Walla, at \$19,279.55.

Seattle, Wash.—Lowest bidder for grading, etc., Baker Ave., is Henry Brice, at bid of \$40,152.

Seattle, Wash.—Contract for paving 23d Ave. North to D. H. Traphagen at \$4,618.36.

Seattle, Wash.—For paving 14th Ave., to P. J. McHugh Paving & Constn. Co., at \$19,360.40.

Dodgeville, Wis.—For construction of 2,200 sq. ft. concrete sidewalks to R. McCarragher, Hollandale, Wis., at 9 cts. per sq. ft.

Superior, Wis.—City Commission of Superior has let two more contracts for laying concrete sidewalks. C. Skamer was awarded job of laying 30,500 ft. in ninth ward at 10.7 cts. per ft., and Magnus Peterson was awarded laying of 13,200 ft. at 12.5 cts. per ft.

New Westminster, B. C.—For paving 12th St., to Columbia Bitulithic Co., New Westminster, at \$13,668.

SEWERAGE

Northport, Ala.—Citizens have voted \$3,000 in bonds for sewer construction. E. B. Kay, is engineer, Tuscaloosa.

Mesa, Ariz.—Election has resulted by vote of 71 to 18 in favor of issuing sewer bonds in sum of \$75,000.

Fresno, Cal.—A \$500,000 bond issue for a sanitary sewer system, storm sewer, garbage incinerator and fire department improvements may shortly be called.

Los Angeles, Cal.—Ordinances have been passed for construction of sewers in various streets.

Sacramento, Cal.—Bids for unit No. 1 of trunk line sewer on Riverside Rd. have been opened by City Commission. Indications are that Matthews Construction Co. of this city is low bidder: Unit No. 1 consists of about a mile of 60-in. reinforced concrete sewer pipe. It extends from pumping station on Riverside Rd., thence north to Swanston's slaughter house and then east across the Freeport Rd. The sewer will cost in neighborhood of \$55,000.

Tampa, Fla.—Election has resulted in favor of issuing sanitary sewer system bonds in sum of \$250,000. D. B. McKay is Mayor.

Fort Wayne, Ind.—Board of Works has ordered plans for system of alley sewers in vicinity of Organ and Bond Aves. and Organ and Hoagland Aves. and for vacation of alley west of Beaver Ave. from Wildwood Ave. to first alley south. A resolution was adopted for main sewer to run from western terminus of the Wayne St. sewer to Garden St.

Frankfort, Ind.—Bids will be received until 2 p. m., June 17, for construction of South West District sanitary sewer and the South West local sanitary sewer, consisting of 680 ft. 15-in., 1,030 ft. 12-in., 1,170 ft. 10-in., 4,880 ft. 8-in., and 2,840 ft. 6-in., 175 of each Y branches, ¾ bends and increasers, 9 lamp holes, 25 manholes, 4 flush tanks and 4 combined flush tanks and manholes. Estimated cost, \$14,650. R. H. Boynton is City Engr.

South Bend, Ind.—Resolution for sewer on St. Peter St. and Sorin St., from Eddy to St. Louis St., has been adopted.

Waterloo, Ia.—It will cost approximately \$45,000 to install sewerage system in Westfield, Hagerman and Galloway additions, according to estimate filed by water, sewer and gas committee at meeting of City Council. This expense will be in addition to cost of installing a disposal plant. The committee was not prepared to submit estimate on cost of disposal plant. The estimated cost of installing the system in each addition follows: Westfield, \$10,181; Galloway, \$13,769; Hagerman, \$21,293; total, \$45,243. The committee recommended that owing to nature of work that a consulting sanitary engineer be employed to take charge of preparing of plans and supervision of construction work. A blank contract with Burns & McDonnell, consulting engineers of Kansas City, was filed and committee recommended that they be secured to take charge of work. Contract provides that concern will receive \$500 for preparing plans and taking charge of work. Plans and estimates are based upon system that will take care of a population of 10,000 people.

Pittsburg, Kan.—Ordinance has been passed providing for an 8-in. tile sewer lateral in district No. 30, and in sewer district No. 3.

Topeka, Kan.—Resolution has been adopted for construction of public sewer beginning at Washington Ave. and Seventh St.

Hammond, La.—Election has resulted by vote of 144 to 33 in favor of issuing sewer bonds in sum of \$40,000. T. R. Thames is Comr. of Finance.

Portland, Me.—Important sewer construction work in North Deering, the beginning of system that will ultimately take care of all territory included in North Deering section, will be done this year when Washington Ave. sewer will be extended to vicinity of Allens Corner at estimated cost of \$18,000.

Waterville, Me.—It has been ordered that committee on streets and sewers be authorized to ask for bids for extension of Hayden Brook sewer to Dunbar court.

Hagerstown, Md.—Installation of sewerage system is being discussed.

Milford, Mass.—Sewer Commission has opened bids for construction of 325 ft. of sewer on Winter St., from Granite to Lincoln St., taking in territory originally represented in connections of those whose property involved that of Milford Holding Co. Vincenzo Calabrese, the

lowest bidder, was awarded contract, his figure for entire work being \$568.50.

Northampton, Mass.—City finance committee will recommend appropriation of \$10,000 for proposed work of sewer department, which includes important line from Hospital hill to West St.

Flint, Mich.—On motion of Alderman Armstrong, city engineer was instructed to furnish plans for sewers on Seventh, Eighth and Ninth Sts. in Fairfield addition (the old fair grounds), the sewers to be built and paid for by Alderman Kellar, owner of the plat.

Hibbing, Minn.—Petition has been received asking for extension of sewers.

Camden, N. J.—Ordinance has been adopted providing for \$10,000 bond issue for construction of sewerage disposal plant to be located on city property at Cooper River. Street Commissioner Sayrs has prepared plans for plant which, if they prove successful, will solve problem of disposing of Camden's sewerage.

Pleasantville, N. J.—It is understood from officials that number of engineers have offered services from different parts of country to map out plans for sewerage in Pleasantville.

West Orange, N. J.—A plan to have sand filtering sewage plants in St. Cloud and Pleasantdale sections of West Orange is being urged by Dr. Morris Farkas, health inspector, at meeting of the Board of Health.

Auburn, N. Y.—Proposition to appropriate sum of \$1,500 for the rebuilding and reconstruction of the sewers in Seneca St. has been carried.

Herkimer, N. Y.—An issue of \$30,000 village sewer bonds will be sold at public auction by board of trustees in municipal building. The issue extends from one to thirty years, one bond of \$1,000 being payable each year.

Illon, N. Y.—Village will vote June 11 on question of issuing sewer bonds in sum of \$30,000.

Rochester, N. Y.—Committee on County Buildings has been ordered to obtain estimates as to cost of constructing sewerage disposal plant at County Home in Hopewell.

Springfield, O.—Ordinance has been passed determining to proceed with construction of sewer in Gallagher St. from Clifton St. to first alley south of Liberty St.

Springfield, O.—Ordinance determining to proceed with construction of a sanitary sewer in Edwards St. from James to Gothic, was given first reading, and another relating to paving of Clifton St. from East to Lafayette was passed. A special assessment levying at the rate of 73 cts. per ft. front for the Pearl St. sewer system was given first reading. The total cost to property owners is \$8,077.56. Ordinance to proceed with construction of a sanitary sewer in Gallagher St. from Monroe to 60 ft. north of Pleasant, was given first reading.

Tulsa, Okla.—See "Miscellaneous."

Beaver Falls, Pa.—At meeting of the Beaver Falls city council resolution was passed authorizing Mayor McClure and City Clerk Rayle to file bond of \$10,000 with view of entering condemnation proceedings in connection with purchase of site of proposed disposal plant from Max Solomon.

Beaver Falls, Pa.—At special election in Beaver Falls electors voted in favor of issues of \$40,000 for construction of disposal plant, and for \$75,000 refunding issue, but turned down paving issue of \$100,000. Consulting Engineer Leo Hudson is expected in city with bidders on proposed disposal plant. Plans and specifications for this work have been prepared and it is the intention of city commissioners to award the contract as soon as possible and have plant in operation by Aug. 1.

Johnstown, Pa.—That work on construction of outfall sewer, beginning at site of proposed disposal plant, may be begun about Aug. 1, is belief of Sanitary Engineer Clark P. Collins. He said that he felt sure work could be carried on until well into November. City is now advertising the \$150,000 bond issue intended to defray cost of work done this year. Thoroughfares which will be sewer in accordance with the new plans before they are paved this summer are: Park Pl., Seigh Alley, Bausman Alley, Somerset St., Napoleon St., Dibert St., Grant St., Linton St., Southmont Ave., Power St., Central Ave. and Cypress Ave. Work on disposal plant itself is not expected to be started for two years, as the plant will not be needed before that time.

Philadelphia, Pa.—Reconstruction and relocation of sewers are urged before excavation work of Broad St. Subway is started.

Williamsport, Pa.—Two sewer ordinances have been passed on second and third reading by City Council. The bills are for construction of storm water sewer in Campbell St. from Maynard alley to West 3d St. and house sewer in Menne alley from Elizabeth St. to Henrietta alley.

Knoxville, Tenn.—Sewer extensions in West Knoxville are being discussed.

Beaumont, Tex.—Bond issue of \$30,000 for sewers has been carried.

Salt Lake City, Utah.—Bids will be called for two sewers, No. 351, 13th East, \$33,381.50, and No. 352, Canyon St., \$1,764.19.

Richmond, Va.—City Engineer Bolling has advised board that it will cost \$275,000 to build sewer from Second St. to Sled St.

Wausau, Wis.—City Council has passed ordinance which provides for issuance of sewer bonds in sum of \$28,000.

West Allis, Wis.—Bids have been received for construction of storm sewers, and four lowest bidders are as follows: Public Service Construction Co., Omaha, Neb., \$8,071.36; A. C. Schreiber, Manitowish, Wis., \$8,438.86; Kroening Construction Co., Milwaukee, Wis., \$8,703.20, and F. E. Kaimski, Watertown, Wis., \$9,134.30. Itemized bid of lowest bidder, the Public Service Construction Co., is as follows: 10-in. pipe, 43 cts. per ft.; 12-in. pipe, 45 cts. per ft.; 15-in. pipe, 60 cts. per ft.; 18-in. pipe, 84 cts. per ft.; 42-in. concrete pipe, at \$3.59; 42-in. vit. segment block, at \$3.59; brick catch basins, at \$25 each, and wooden box inlets, \$11 each. E. G. Ogbert is city engineer.

CONTRACTS AWARDED.

Stockton, Cal.—For construction of 6-in. vitrified pipe sewers to Bishop & Tumulty at following bid: 5,844 lin. ft. 4-in. sewer at 26 cts.; 10,950 lin. ft. 6-in. sewer at 36 cts.; 265 6x4 Y branches at 40 cts.; 260 4-in. curved branches at 30 cts.; 17 manholes with flushers at \$52, and 18 manholes without flushers at \$42. Total bid, \$7,285.44.

Bridgeport, Conn.—Acceptance of contract for new trunk sewer in Housatonic Ave., that over which there has been so much discussion of late, by the B. D. Pierce, Jr., Co., successful bidders, has been announced by William Chew, president of Paving and Sewer Commission. The firm takes contract at figure of original bid of \$56,866 plus the \$1,240 allowed them on what they claimed to be clerical errors in bidding.

Herrin, Ill.—For construction of mechanical filtration plant, with a 1,000,000-gal. daily capacity, to Pittsburgh Filter Mfg. Co., Pittsburgh, Pa., at \$18,107. Other bids were: New York Continental Jewell Filtration Co., \$18,043; Kennicott Co., \$19,000; H. H. Hall Construction Co., \$18,036. R. L. Adams is city engr.

Peoria, Ill.—For construction of north-west extension of west section of North Peoria sewer to A. D. Thompson, Peoria, at \$5,123.65.

South Bend, Ind.—For constructing sewers in Michigan St. to J. H. Cahill, 1540 9th St., Louisville, Ky., \$42,840. Other bidders: Michaels & Minnick, Marion, \$48,471; O'Donnell & Thornberry, Vincennes, \$51,756; Hoban & Roach, South Bend, \$58,363; L. H. Webster, South Bend, \$63,312. Work includes 22 lin. ft. 24-in., 1,020 lin. ft. 60-in., 1,518 lin. ft. 54-in., 452 lin. ft. 48-in. reinforced concrete pipe and 5,000 lin. ft. 8-in. vitr. sewer pipe. V. C. Sweeney is Clk. Bd. Pub. Wks.

South Bend, Ind.—To Depoepe & Cousens has been awarded contract for pipe sewer in Bowman St., and to L. H. Webster contract for pipe sewer in Fellows St. Contract price for first job is \$2,945.80 and for second \$206.97.

Tripoli, Ia.—For construction of sewer system and sewage disposal plant, to Cedar Rapids Construction Co., at \$20,728. Other bids were: D. E. Keller Co., Davenport, \$23,654; Michael McEllicot, Evanston, Ill., \$22,833; Dearborn Construction Co., Waterloo, \$25,882; Taylor & Moriarty, Sioux City, \$22,964; Henry Rees, Quincy, Ill., \$24,701.

Fitchburg, Mass.—For Bemis Rd. siphon connection with main sewer to T. A. Cassidy, Fitchburg, at \$7,253.

Flint, Mich.—Thomas Bergen & Son have been awarded contract on their bid of \$1,416 for construction of Third and Mathewson St. sanitary sewer. A number of other sewers will be con-

structed by city on recommendation of sewer committee.

St. Paul, Minn.—By City Council to Doherty & Sons at \$1,300 for sewer on Stinson St., and to J. J. Connolly at \$2,600 for sewer on Butternut St.

Binghamton, N. Y.—For furnishing and laying sewer mains to Geo. Serafini, at total bid of \$3,000. D. W. Foster is City Clerk.

Huntington, L. I., N. Y.—Following action of Huntington Town Board, work on sewerage system for this village will be started within a short time, and it is expected that work will be completed and ready for use by Dec. 1. Sewerage Commission has appeared before Board and requested issuance and sale of bond issue in amount of \$98,000, which will be total cost of the installation of system. Contract has been awarded to Frank Nordone, Mount Vernon, whose figure was \$77,948.80.

Huntington, N. Y.—Contract for sewerage collecting system (about 14 miles of sewers) and disposal works has been awarded to Frank Nordone, Mt. Vernon, N. Y., at following bid: "A" sewers and appurtenances: 4,400 lin. ft. 8-in. vit. pipe sewer—0 ft.-6 ft. cut, 40 cts.; 48,375 lin. ft., 6 ft.-8 ft. cut, 42 cts.; 5,555 lin. ft., 8 ft.-10 ft. cut, 65 cts.; 2,845 lin. ft., 10 ft.-12 ft. cut, 80 cts.; 1,040 lin. ft., 12 ft.-14 ft. cut, 95 cts.; 245 lin. ft., 14 ft.-16 ft. cut, \$1.10; 50 lin. ft., 16 ft.-18 ft. cut, \$1.50; 10-in. vitrified pipe sewer—310 lin. ft., 0 ft.-6 ft. cut, 50 cts.; 7,885 lin. ft., 6 ft.-8 ft. cut, 60 cts.; 855 lin. ft., 8 ft.-10 ft. cut, 75 cts.; 50 lin. ft., 10 ft.-12 ft. cut, 95 cts. 12-in. vitrified pipe sewer—680 lin. ft., 0 ft.-6 ft. cut, 65 cts.; 1,205 lin. ft., 6 ft.-8 ft. cut, 73 cts.; 120 lin. ft., 8 ft.-10 ft. cut, 85 cts.; 35 lin. ft., 10 ft.-12 ft. cut, \$1; 75 lin. ft., 12 ft.-14 ft. cut, \$1.09; 80 lin. ft., 14 ft.-16 ft. cut, \$1.29; 50 lin. ft., 16 ft.-18 ft. cut, \$1.50; 15-in. vitrified pipe sewer—225 lin. ft., 0 ft.-6 ft. cut, 75 cts.; 730 lin. ft., 6 ft.-8 ft. cut, 94 cts.; 610 lin. ft., 8 ft.-10 ft. cut, \$1.05; 50 lin. ft., 10 ft.-12 ft. cut, \$1.15. 8-in. vitrified pipe sewer with bituminous joints—20,000 lin. ft., 5 cts. 10-in. vitrified sewer with bituminous joints—4,000 lin. ft., 6 cts. 12-in. vitrified sewer with bituminous joints—2,000 lin. ft., 7 cts. 15-in. vitrified pipe sewer with bituminous joints—500 lin. ft., 8 cts. Laying and trenching 14-in. c. i. pipe—2,000 lin. ft., 0 in.-6 in. cut, 50 cts. 5-in. Y-branches on 8-in. pipe—2,500, 35 cts. 5-in. Y-branches on 10-in. pipe—365, 45 cts. 5-in. Y-branches on 12-in. pipe—90, 55 cts. 5-in. Y-branches on 15-in. pipe—60, 65 cts. 5-in.- $\frac{1}{2}$ bends—2,000, 25 cts. 5-in. double Y-branches, including caps—400, 50 cts. 5-in. vitrified pipe risers—1,500 lin. ft., 45 cts. Flush tanks and appurtenances—55, \$65. Manholes and appurtenances—240, \$37. Cast-iron pipe—90 tons, \$24. Cast-iron specials—1 ton, \$59. Rock excavation—10 cu. yds., \$2. Extra earth excavation—100 cu. yds., \$1. Extra earth filling—200 cu. yds., 75 cts. Extra broken stone or gravel filling—20 cu. yds., \$1.85. Concrete for sewerage system—20 cu. yds., \$6. Lumber for foundations—1,000 ft. B. M., \$35. Piles—500 lin. ft., 60 cts. Sheathing left in place—10,000 ft. B. M., \$31. Relaying of cement walks—250 sq. yds., \$1.80. Relaying of wood block pavement with concrete base—20 sq. yds., \$1.90. Relaying of flag stone walk—900 sq. yds., 15 cts. Relaying of bituminous macadam pavement—4,000 sq. yds., \$1.60. 1-in. galvanized iron pipe line—2,000 lin. ft., 13 cts. "B" sewage disposal works: Settling tank and appurtenances—Lump, \$5,044. Storage tank and appurtenances—Lump, \$2,480. Building, sterilizing devices and appurtenances—Lump, \$2,720. Sludge drying bed and appurtenances—Lump, \$1,500. Total, \$77,948.80. Total of next 3 lowest bidders are: Fred. E. Gross & Son, Yonkers, N. Y., \$79,302.40; Lincoln-Steele Fleming Co., New York City, \$81,123.20; Peter D'Amato, Newark, N. J., \$86,530. George W. Fuller, 170 Broadway, New York City, is consulting engineer.

Oswego, N. Y.—Low bidders on sewer construction, bids opened June 1, 1915, are as follows: Arthur J. Shew, Jr., Batavia, N. Y., for East Bridge St. 8-10-12-15-18-22-24-30-33-36-in. sewer, \$10,782.07. Lyon, Cayuga and Tenth St., 8-in. V. T., \$2,359.26. Utica St. 8-in. V. T., \$1,507.70. Schuyler St., 8-in. V. T., \$2,958.50, and Mercer St., 8 and 10-in. V. T., \$4,922.27. J. F. Flanagan is City Engr.

Schenectady, N. Y.—Thomas F. McGregor has been awarded contract for laying of sanitary sewer in Park St., bids opened being: Kalteaux & DeNallo, \$1,409.50; John Allen, \$1,390.90; Ellis B. Edgar, \$1,412.20; T. F. McGregor, \$1,131.30.

Cincinnati, O.—For construction of sewers in Manns, Latham and Beech Ave., to Connelly Construction Co., at \$17,108. Frank Krug is city engr.

Piqua, O.—Charles F. Smith & Co., of Springfield, O., has been awarded two sewer contracts in Piqua. One of the contracts is for \$2,066 and the other \$4,114. Boyd & Cook, who have the Scioto and Kenton St. storm sewer were awarded a sewer contract for one of Piqua streets.

Salem, O.—R. Auld & Son, of this city, were low bidders when bids were opened for Sugar Tree Alley storm water sewer, to care for storm water from near Allsworth Ave. west to point near Jennings Ave. Their bid was \$528.50.

West Chester, Pa.—By Boro. Council to M. and T. E. Farrell, of West Chester, for constructing 14,000 ft. 8, 10 and 12-in. terra cotta pipe sewers, at \$8,800.

Ogden, Utah.—Following are lowest bids received for vitrified clay pipe sewer and 4-ft. concrete manholes in following districts: Dist. No. 124, 714.5 lin. ft., 4 manholes, Wheelwright Const. Co., Ogden, Utah, \$1,038.80; Dist. No. 125, 1,595.5 lin. ft., 4 manholes, C. E. Reed, Salt Lake City, \$1,640; Dist. No. 126, 785.48 lin. ft., 2 manholes, Mullins & Palm, Salt Lake City, \$828.25, and Dist. No. 127, 761.04 lin. ft., 3 manholes, Mullins & Palm, \$880.35.

Seattle, Wash.—Lowest bidder for sewers on 10th Ave. N. W. is A. Arnaldo & Co. at \$2,783.90.

Seattle, Wash.—By Board of Public Works for construction of sewers in Leary Ave. to Benjamin, Hawkey & Gartner, 36th Ave., S. W., Seattle, at \$18,974.

Green Bay, Wis.—For constructing sewers to C. P. Flatley of Green Bay as follows: 42-in. Parmerley per lin. ft., \$5.80 or \$7.22; 36-in., \$6.05 and \$4.95, and 24-in., \$1.36; 20-in., \$2.25; 12-in., 77 cts.

New Glarus, Wis.—For sewer construction lowest bidder was G. W. Mulholland, Kaukauna, Wis., at following bid: 600 ft. 5-in. pipe, 43 cts. per ft.; 250 ft. 6-in. pipe, 43 cts.; 871 ft. 8-in. pipe, 45 cts.; 1,575 ft. 10-in. pipe, 46 cts.; 2,476 ft. 12-in. pipe, 50 cts.; 13 manholes at \$40; 1 flush tank, \$65; 1 L. H., \$5; total, \$3,302.91.

West Allis, Wis.—For construction of 42-in. concrete pipe sewer and small sizes vitrified pipe sewer to Public Service Const. Co., Omaha, Neb.

Stratford, Ont.—To Brennan & Hollingsworth, of Hamilton, at \$25,891, contract for furnishing and delivering 6,200 ft. of 48-in. sewer pipe and 5,400 ft. of 36-in. sewer pipe.

WATER SUPPLY

Athens, Ga.—One of most important meetings of Mayor and Council has just been held, at which report read by Board of Health was adopted unanimously, calling for immediate enlargement and improvement of waterworks plant—to afford greater supply of clear, pure water, of absolutely guaranteed wholesomeness and freedom from objectionable taste and odor. The additions and improvements immediately planned are to cost \$5,000. These additions to plant equipment will consist of two additional filters—making fourteen in all. The new filters will be equipped with important attachments for rate control—and later in year the other twelve filters will also be so equipped. An apparatus will be installed to employ new liquid chlorine process of purification—to take place (except in cases of emergencies) of present hypo-chloride of lime treatment. This latter system will be retained for use if needed at any time. Apparatus will be installed also for frequent tests of plant's operation of coagulation and purification—several times daily.

Waukegan, Ill.—Bids received for installing liquid chlorine plant have been rejected and city engineer has been instructed to prepare new specifications and to readvertise for bids.

Des Moines, Ia.—City is considering expenditure of about \$200,000 for construction of Closer Creek sewer system. F. Carrs is engr.

Oakley, Kan.—Bonds in sum of \$10,000 have been issued for building and extension of water and lighting plant.

Covington, Ky.—Commissioner of Public Property J. Mason Hawk will introduce resolution at meeting of City Commissioners providing for receiving bids for cast-iron pipe to be used in emergency main. All bids presented must be for pipe and delivery in Covington and at Wilder Station in Campbell county.

It will require 996 tons of class C pipe, 2,591 tons of class D pipe and 20 tons of special castings to construct the main.

Lawrence, Mass.—Commission has been appointed to prepare for a future water supply.

Mansfield, Mass.—Warrants have been posted for special meeting of Mansfield water district to be held in town hall June 9. There are numerous articles, including request for appropriation of some \$12,000 to place top on town's mammoth storage reservoir on Foolish hill; also to see if district will vote to petition legislature for authority to extend water district in East Mansfield and West Mansfield.

Saginaw, Mich.—It is proposed by the Saginaw Council to formulate plans for consolidated pumping station and filtration softening water plant, to present same for consideration of people in June and to have vote on bond issue necessary to bring plans to fruition about first week in October.

Boyle, Miss.—Town is considering question of issuing water works bonds in sum of \$7,500.

Billings, Mont.—Plans for turning of Hollings lake, three miles north of city, into reservoir that will assure reserve supply of irrigating water to hundreds of settlers in a 2,000-acre tract east of the lake, are under consideration by the Billings Land and Irrigation Co.

Judith Gap, Mont.—Special election will be held June 14 to vote on question of issuing water bonds in sum of \$12,500.

Hastings, Neb.—Bids will be received up to 5 p. m., June 14, for installing water mains in water districts No. 9, No. 10 and No. 11, as per plans prepared by Acting City Engineer W. H. Fuller. A. T. Bratton is City Clerk.

Hastings, Neb.—Engineer's specifications and estimates for water extensions in districts created a short time ago were adopted and city clerk instructed to advertise for bids for construction work.

Sterling, Neb.—City is considering question of issuing water plant construction bonds in sum of \$22,000.

Totowa, N. J.—Special election will be held June 21 to vote on question of issuing water works bonds in sum of \$60,000.

Hilton, N. Y.—At special election held in Village Hall taxpayers of Hilton decided by majority vote of more than two-thirds of voters to install system of waterworks for which bonds will be issued for estimated amount of \$49,000. Water will be brought to Hilton from Lake Ontario, and will be adequate to meet all demands, thus insuring protection against fire, as well as adding to convenience and health of village.

Oneida, N. Y.—Water commissioners have met with officials of Kenwood and Sherill to discuss soft water proposition. It was decided that at least 400,000,000 gallons of water will be necessary to supply city within a 20-year period, and that reserve of 200,000,000 gallons will be needed according to estimate.

Oswego, N. Y.—Special election will be held shortly to vote on question of issuing \$35,000 in bonds, proceeds of which will be used for extension and repair of water system.

Warrenton, N. C.—Election has resulted in favor of issuing water works and sewerage bonds in sum of \$50,000.

Farmersville, O.—Village has voted in favor of using bonds in sum of \$16,000 for constructing waterworks plant.

Middletown, O.—The \$120,000 water works bond election to have been held in Middletown has been called off. In order to save expenses of special election and to afford more time to present question to people proposition will now be submitted to voters of Middletown at coming August primary election.

Marietta, O.—Marietta city will build new concrete reservoir on Jackson Hill. It will be of 6,000,000 gals. capacity, and will be submerged to within about 3 ft. of top. Plans drafted by City Engineer Gates have been given stamp of approval by State Engineer Murray, of Columbus, and as soon as State Board of Health passes upon the matter bids will be called for by city authorities.

South Charleston, O.—By vote of 269 to 84, South Charleston, has voted in favor of municipal waterworks. Decision carries with it a \$30,000 bond issue.

Youngstown, O.—The granting of a franchise by Girard Council to James W. Morris and David M. Wise for a 24-in. pipe-line on West Broadway and

Market Sts., is beginning of important piece of hydraulic construction in which number of capitalists in this city are said to be interested. The pipe line for which this franchise has been granted will extend from Girard to reservoir already planned on Squaw creek, about 1½ mile north of Girard and about 3¼ miles from city limits of Youngstown. This reservoir will dam stream having large and steady flow and will cover about 100 acres, its capacity being somewhere in neighborhood of 750,000,000 gallons.

Gratz, Pa.—State department of health has approved preliminary plans of Gratz Water Co. for construction of pumping station, reservoir and pipe lines.

Hegins, Pa.—Preliminary plans of Hegins Water Co. for construction of a reinforced concrete reservoir have been approved by state department of health.

Mifflinburg, Pa.—Citizens will vote on June 22 on bond issue for the construction of 5,000,000-gallon reinforced concrete reservoir.

Mifflinburg, Pa.—Election will be held June 22 to vote on question of issuing reservoir bonds in sum of \$5,500.

Morrisville, Pa.—State Board of Health has given notice to this borough to build filtration plant to cost about \$15,000.

Edgemont, S. D.—Electors have voted bond issue of \$30,000 for improvement of municipal system of water works.

Dallas, Tex.—Sanitary sewer extensions aggregating cost of \$38,800 will be made this year from revenues of city water department. This item is included in annual budget of water department under which sanitary sewer extensions are listed. New lines to be constructed follow: On Fitzhugh Ave., from an alley between Live Oak and Bryan to Frederick St., 3,100 ft. of 12-in. main. From the end of the Cedar Creek interceptor to Beckley Ave., 1,500 ft. of 15-in. main. Santa Fe to Terry, 1,800 ft. of 10-in. main. Kidd Springs Creek, Zang's to Winnetka, 11,000 ft. of 12 and 15-in. main. Turtle Creek end of the north interceptor of the old golf grounds, 5,000 ft. of 15-in. main. A line from Cedar Creek to Lancaster and 12th, connecting with the Cedar Creek interceptor, a 15-in. main. Line of 15-in. main from the end of the south interceptor to Pennsylvania and Whitaker.

Norfolk, Va.—The bid of R. P. Denby to install 300 ft. of 6-in. water main in Spottswood, Shirley, Gates and Harrington Aves., at 60 cts. a ft., has been referred to engineer in charge of water department.

Bluefield, W. Va.—City is preparing plans for installation of new water works system. William McCarthy is making rounds of cities of State where model plants are located, Clarksburg, Weston, Point Pleasant, Parkersburg, Charleston, Huntington, to gather data for the new plant.

Aberdeen, Wash.—Mayor J. M. Phillips has recommended bonding city for \$100,000 for purpose of undertaking the building of Wynooche water system.

Aberdeen, Wash.—If Council adopts plans of Mayor J. M. Phillips, Aberdeen will take steps at once to bond city for \$100,000 to secure a permanent water supply and power plant. The plan as outlined by Mayor at last meeting of Council is to tap waters in canyon of Wynooche river and bring them distance of 23 miles into the city.

Seattle, Wash.—Plans have been approved for water mains in East 54th St.

Ellsworth, Wis.—Special election will be held June 15 to vote on question of issuing water main extension bonds in sum of \$7,000.

CONTRACTS AWARDED.

Palo Alto, Cal.—For 4 miles of water mains to Jas. Stanley, Sr., of Sausalito, at \$13,396. Frank Kasson is City Clk.

Washington, D. C.—For water system in Custer Battlefield Cemetery, Montana, lowest bidder was W. D. Lovell, Minn., at \$5,600.

Plant City, Fla.—For pipe and special castings to American Cast Iron Co., Birmingham, Ala.

Peoria Heights, Ill.—To W. G. Hoy, of Woodstock, for laying mains at \$47,000.

Prophetstown, Ill.—Town Council has awarded contract for 100 water meters to the National Meter Co. of New York.

Salem, Mass.—Contract for building new Salem reservoir by A. G. Tomasello of Boston has been signed up. Price for Folly Hill reservoir is to be \$67,455, which was lowest bid.

Holland, Mich.—For furnishing material for sinking of 15 new municipal wells to Jas. E. Clow & Sons, of Chicago, Ill.

Traverse City, Mich.—The Traverse City Iron Works has secured another contract for water works system at Marion. Contract calls for 66,000 ft. of pipe, 12 hydrants, a 30,000-gallon tank and other equipment. The price is \$7,500.

Chillicothe, Mo.—The Chillicothe Iron Co. has been awarded contract for intakes to be used in extension of water system at \$8 each.

Atlantic Highlands, N. J.—For laying 1½ miles 4 to 8-in. c. l. water mains to Robt. W. Smith Co., 30 Church St., New York, at \$5,978. J. J. T. Franklin is Boro. Clk.

Newark, N. J.—To Marks, Lissberger & Co., Inc., of Long Island City, for annual supply of lead pipe and pig lead to cost about \$15,000 per year.

Auburn, N. Y.—To Pitometer Co., of New York City, contract from Water Board for survey of water system.

Lockport, N. Y.—Bids have been received by Common Council for construction of drain and water pipe in Reed St. from Elmwood Ave. 600 ft. easterly from three local contractors and awarded contract to F. J. LeValley, the lowest bidder on his proposal of \$900. Other bidders were C. E. Whitmore Co., \$915, and H. A. Smith, \$1,117.75.

Schenectady, N. Y.—Three bids have been opened for filtration plants for public school swimming pools, as follows: International Filtering Co., of Chicago, \$2,400; J. R. Sheehan Co., of this city, using a Norwood filter, \$2,363; Norwood Engineering Co., of Florence, Mass., \$2,400. J. R. Sheehan Co. also bid on the work of installation. The latter firm was awarded the contract, the total cost of which is \$3,522. Filters are to be installed in Seventh Ave., Willett St. and Mumford St. schools.

Durham, N. C.—For water works improvements from plans of G. C. White, of Charlotte, N. C., as follows: C. I. pipe, Glamorgan Pipe & Foundry Co., Lynchburg, Va., \$23.50 per ton; lay 20-in. pipe line, W. G. Fritz Co., Newark, N. J., 62 cts. per ft.; city pumping station and river pumping station to Christian Constr. Co., Durham, at \$21,327 and \$9,326, respectively; filter equipment, Roberts Filter Mfg. Co. (Darby), Philadelphia, \$13,300; tower and tank, J. S. Schoenfeld Sons Co., \$1,777; pumping engines, Allis-Chalmers Co., Milwaukee, \$18,000; boilers, D. M. Dillon Steam Boiler Works, \$7,087; valves and hydrants, Chapman Valve Mfg. Co., Indian Orchard, Mass., \$2,094.

Allentown, Pa.—To Wallace & Tiernan Co., Inc., New York City, at \$1,482, to install liquid chlorination plant at city pumping station.

Smithton, Pa.—By Borough for furnishing and laying 1,747 ft. 8-in. water mains and 3,463 ft. 4-in. lowest bidder was J. I. Dick, Scottsdale, Pa., at total bid of \$4,160.88.

Fort Worth, Tex.—Contract for motor-driven centrifugal pumping machinery for dual water system was let to Allis Chalmers, of Dallas, for \$1,447.58. A large number of bids were received. The following submitted the two lowest bids, besides Mr. Chalmers: Texas Mfg. Co., Fort Worth, \$1,690; Axtell & Co., of Fort Worth, \$1,781.

Norfolk, Va.—Board of Control has awarded following contract: To make 30-in. connection from coagulating basin to waterworks pump to Whit P. Tunstall, whose bid was \$978.

Richmond, Va.—Contract of city with Electro Bleaching Gas Co. of New York for supplying city water works with liquid chlorine for this year has been renewed by Administrative Board.

Prescott, Wash.—To George Schreiber, Walla Walla, at \$3,449, for making extensions to water system.

LIGHTING AND POWER

Bessemer, Ala.—Question of bond issue for erection of lighting plant is being considered.

Pasadena, Cal.—Resolution has been read for first time adopting specifications for iron and copper ornamental light posts on Marengo, from Colorado to Glenarm. These posts, if installed, will be last word in modern ornamental street lighting.

Washington, D. C.—An American consular officer in Italy has transmitted detailed report relative to possible market for sale of American incandescent lamps with drawn filaments, both in vacuum and concentrated filament gas-filled

types. No. 17,019, Bureau of Manufactures.

Shellsburg, Ia.—Special election will be held June 7 to vote on question of issuing light plant bonds in sum of \$10,000.

Lyons, Kan.—Council will meet to consider matter of White Way around the square. The Electric Light company is placing conduits in new cement sidewalks as they are being laid around square and will also put in electric light poles for new White Way at same time if city will agree to use lights after lamps are in.

Bay City, Mich.—Bay City will have a "white way" lighting system on its principal business streets next year if present attitude of electric light committee is put into resolution.

Lakefield, Minn.—Election will be held to vote on question of issuing electric light and water power plant bonds in sum of \$31,000.

Kirkville, Mo.—Election will be held June 24 to vote on question of issuing lighting plant bonds in sum of \$70,000.

Bozeman, Mont.—At special meeting of Bozeman city council resolution throwing all of Main St. into special improvement district for purpose of installing a system of cluster lights was passed, and June 17 was named as date for hearing protests, if any, to the plan. As contemplated, there will be 46 ornamental steel poles standing on corners of street junctions, and 74 combination poles used to support lights and trolley wires of the Gallatin Valley Street Railway Company. Total cost will be in the neighborhood of \$15,000, with about \$3,300 annual maintenance cost.

Shelton, Neb.—Board of Trustees has passed ordinance authorizing the issuance of lighting system bonds in sum of \$8,000.

Tekamah, Neb.—Election has resulted in favor of issuing electric light and power plant bonds in sum of \$15,000.

Bradley Beach, N. J.—Bids have been received for lighting on a 5-year basis as follows: The Atlantic Coast Electric Light Co. agreed to furnish boro with 86 lamps equipped with 400-candle-power series incandescent lamps for \$6,025 on a five-year contract. The Cost Gas Co. submitted a price of \$72 per light per year for one year; \$68 per light per year for three years, and \$65 per light per year for five years, these figures to include 86 or more lamps lighted at dawn and extinguished at sunrise by the company, of 400-candle power. Prices for lamps of lesser candle power were also included in the bid with the rates for one, three and five years.

Canastota, N. Y.—Question of establishing ornamental lighting system in business section of village will be acted upon at next meeting of village board. Petition asking village officials to arrange for ornamental lighting has been filed with village clerk.

Herkimer, N. Y.—Board of supervisors has adopted resolution directing purchasing agent to call for bids to install electric lighting system in County Home buildings and also to ask for bids for providing of electrical current. The resolution was adopted after giving of report of purchasing agent of plans, specifications and estimate of cost of installing a new lighting system.

Warsaw, N. C.—At mass meeting of citizens with Town Commissioners here it was decided to grant 20-year electric light franchise to Clinton firm, subject to certain details to be worked out by town officials.

Warsaw, N. C.—Franchise for 20 years has been granted to Oliver & Pettit, of Clinton, to install electric light plant.

Wilmington, N. C.—Petitions circulated by Rotary Club and signed by 300 representative citizens, calling for improved lighting system in downtown section of the city, have been filed with City Council.

Wilson, N. C.—Installation of "white way" is being planned.

Marietta, O.—That Marietta's new municipal electric light plant will cost from \$40,000 to \$65,000, dependent upon how much commercial lighting city is planning to do, seemed to be consensus of opinion of electrical experts.

Massillon, O.—Plans and specifications for revision of Massillon's present lighting system are now being prepared in engineering department of National Lamp Works, Nela Park, Cleveland, under supervision of Ward Harrison, expert electrical engineer. Plans are being made for Massillon Electric & Gas Co., which will furnish them free to city.

Painesville, O.—Special election will be held June 22 to vote on question of

issuing \$35,000 in bonds, proceeds of which will be used for improving municipal electric lighting system.

Springfield, O.—Definite proposals for down town street lighting that will be recommended to city commission for adoption have been submitted by City Manager Ashburner to directors of Merchants' association and approved. Proposal calls for a three globe cluster, the lamps of 100 candle power each and set ten to a block or five on each side of street.

Springfield, O.—Resolutions from both the Commercial Club and Merchants' Association endorsing cluster lamp proposal for downtown street lighting as outlined by city manager some few days ago have been presented to City Commission along with comparative data on installation and operating costs of both gas and electricity, but final action has been deferred until complete plans and specifications are completed by city manager and chief engineer.

Mannsville, Okla.—Election has resulted in favor of issuing electric light bonds in sum of \$5,550.

Media, Pa.—Special election will be held June 8 to vote on question of issuing water works and electric light improvement bonds in sum of \$70,000.

CONTRACTS AWARDED.

Hagerstown, Md.—The Hagerstown and Frederick Railway Co., which last summer bought the Frostburg light plant and has been supplying town with electric current, has just entered into contract with Edison Electric Illuminating Co. of Cumberland, whereby latter company will furnish electricity for lighting purposes to Frostburg, Mt. Savage and Eckart. Contract is for ten years.

Lowell, Mass.—The General Electric Co. of Lynn has received contract for 233 lamps of magnetite type for new white way which is rapidly nearing completion in Lowell.

Spring Lake, N. J.—Council has adopted contract with Point Pleasant Electric Light & Power Co. for electric street lighting.

Mount Olive, N. C.—Managers of Enterprise Lumber Co., who a few weeks ago contracted with the city commissioners here to furnish city with electricity for lighting purposes by night and for commercial purposes by day, have announced that they hope to have everything in readiness to turn on current by July 1. To prepare themselves for this, it is said, has necessitated installation of about \$12,000 worth of new and additional machinery.

FIRE EQUIPMENT

Bridgeport, Conn.—Fire Chief Edward Mooney has recommended purchase of motor combination chemical and hose wagon.

Naugatuck, Conn.—Purchase of combination city service hook and ladder truck is being discussed.

Westport, Conn.—It has been voted to install Loper fire alarm system in this town at meeting of fire district, and \$1,500 has been appropriated to cover the cost.

Dawson, Ga.—Purchase of additional equipment for fire department is being planned.

Paxton, Ill.—Installation of new fire alarm system is under consideration.

Indianapolis, Ind.—Jacob P. Dunn, city controller, will receive bids for purchase of bond issue of \$10,000. The money derived from sale is to be added to fund for erection of new fire engine houses. Bonds will bear interest at rate of 4 per cent. a year and will mature July 1, 1921.

Muncie, Ind.—Appropriation of \$15,000 has been voted for purchase of motor apparatus. Bids will shortly be called for. J. E. Casey is chief.

Council Bluffs, Ia.—Engineer Spetman has recommended purchase of 1,000 ft. of new fire hose for use by sewer flushing gang, instead of using old wornout hose of fire department.

Pittsburg, Kan.—Plans will be made for adopting modern fire department. It is expected that another station and 3 or 4 machines will be the result.

Franklin, N. H.—Council has voted appropriation of \$4,500 for purchase of motor combination chemical and hose wagon. H. E. Colby is chief.

Bayonne, N. J.—On recommendation of William Arbuckle, superintendent of fire alarm system at Police Headquarters, members of commission have voted to change present system, which is classed as antiquated for up-to-date system being used by all leading cities of country.